

HEALTH AND SUCCESS



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12/2/2016
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\$2.00

THE PRACTICAL HEALTH SERIES // BOOK ONE

HEALTH AND SUCCESS

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GINN AND COMPANY

BOSTON • NEW YORK • CHICAGO • LONDON
ATLANTA • DALLAS • COLUMBUS • SAN FRANCISCO

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630.3

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PREFACE

Knowledge is power when it makes for right conduct. Without such driving force it becomes useless lumber.

“Health and Success” is based on the idea that the first formal textbook on health for children should contain facts about health to satisfy their normal curiosity and to enable them to practice intelligently the most fundamental laws of healthy living.

In preparing this volume the writers have kept in mind (1) what should be the most important aims of health education according to the general consensus of opinion of health education experts and (2) the best methods now used in realizing those aims. To enable the teacher better to understand and use the text each of these topics is discussed briefly.

The *aims* of health education are:

1. *Healthful Habits* relating to personal hygiene with some of the most important habits concerned with community health. This book marks an innovation in that it is probably the first textbook for children to emphasize mental health habits, an entire chapter being devoted to this subject.

2. *Knowledge.* This book offers a survey of the elementary facts of physiology and personal hygiene which a child can understand and find useful. The physiology presented is designed to give a general idea of the working of the body. It is definitely organized to make clear the desirability of forming certain health habits. In sympathy with the most recent trend in health education the nutritional aspects of physiology and hygiene are especially emphasized.

Much new material not usually found in children's books has been included. For example, the recent studies on sunlight and health demanded the chapter, "Our Friend the Sun."

3. *Ideals and Attitudes.* Throughout the book the plan is to develop not a fear of disease, but a positive interest in health and its attainment. The word "disease" is seldom mentioned. Such a treatment should promote a sane, hopeful, and wholesome point of view.

In directing teachers and children toward the goals set, in securing driving force or motivation, the authors have depended on the following *methods*:

a. Organizing the subject matter in relation to those things that boys and girls regard as successes. Knowledge and habits which make for health take on a peculiar value when they are considered by children as stepping-

stones toward gaining strength, athletic power, and beauty, toward making money, advancing in school, and having a good time.

b. Making the text attractive by unusually good illustrations and by introducing nearly every chapter with some sort of story.

c. Making the text clear and pointed by chapter and paragraph headings that say something. For example, a chapter is headed not simply "Water," but "Drink Plenty of Water."

d. Providing a large number of reactions for the pupils. Without adequate responses there can be no kind of education. It is not impression alone but impression with *expression* that arouses interest, creates positive attitudes, and forms useful habits. The exercises under Remember, Health Habits, Things to Do, and Review and Thought Questions make the facts not only clear but almost unescapable. The most attractive projects and devices for health teaching in current practice have been introduced under Things to Do.

In keeping with present-day tendencies in health education these exercises offer a chance to correlate health teaching with other subjects of the curriculum, such as history, geography, English, drawing, and manual training.

e. Encouraging ideals and habits of health by associating health practices with the lives of inspiring personalities like Franklin, Roosevelt, and Lincoln.

It is believed that because of the clearness and directness of the book and its appeal to children's interests, teachers will find this a very practical text.

The authors wish to acknowledge their special indebtedness to "Health Education," the report of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, and to the various publications of the United States Bureau of Education and the American Child Health Association. Thanks are also due to Miss Louise Strachan, Director, Child Health Education of the National Tuberculosis Association, for advice concerning that part of the book relating to the modern health crusade and also to Miss Mabel C. Bragg, who read the proof and gave many valuable suggestions. The authors are also particularly grateful for an intimate contact with the public schools of Newton, Massachusetts, where so many of the principles and methods of health teaching presented in this book have been tried out successfully under Miss Bragg's direction.

J. MACE ANDRESS
W. A. EVANS

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GOOD HEALTH HELPS TO WIN THE RACE

HEALTH AND SUCCESS

CHAPTER I

IT PAYS TO BE HEALTHY

Watch the Race. It's fun to run a race! See the boys in the picture. They are enjoying the fresh air and the shouts of their schoolmates. Each is doing his best.

Who will win? That may be hard to tell, because the race is only half run. But everybody knows that in such a race the healthiest boy has the best chance to win.

The healthiest boy is the one who plays for a long time every day in the open air. He sleeps long hours every night, with his windows open. His food is the very best. He never drinks tea or coffee. Every day he drinks about a quart of milk and eats plenty of fruit and green vegetables. Such a boy will have muscles like iron. His heart and lungs will be strong enough to help him run races and win. Do you think you can find him in the picture?

Good health helps boys and girls and men and women to do the biggest and best things in the world.

Health Better than Gold. Long ago, when America was very wild and few white men had set foot in the New World, there lived across the sea a brave soldier. Perhaps you have heard about him already. His name was Ponce de Leon.

He had heard that somewhere in America there was a fountain of perpetual youth. No matter how old one might be, as soon as he had bathed in its crystal waters he would grow young again. If he were lame and bent over with age, he would be able at once to stand erect and to skip about as he did in his childhood. If he had become blind, he would be able to see.

If you have read all the story, you know that after a voyage on the storm-tossed Atlantic Ponce de Leon discovered Florida, the land of flowers. He searched in vain through forests and swamps for the fountain. It could not be found.

Before and since that time men have traveled in the most distant lands in pursuit of youth and health. Men have desired these more than gold and precious stones.

We now know that we do not need to travel in distant lands to learn to be healthy. We can live in such a way that we may keep well and even improve in health. To find health is to discover a fountain richer than any other riches in the world. It is a fountain that helps to keep

people looking and feeling young, and to keep them strong and beautiful for a long, long time.

Let us think of some of the many ways in which it pays us to be healthy.

Health is Wealth. We all would like to be wealthy, and we dream about what we would do if we had more money. What kites and dolls, ponies and boats, we could buy! But there is another kind of wealth besides money. Health is the greatest kind of wealth because, without it, we could not earn money. Many persons are poor because they

have been ill and could not earn a living, so they were forced to draw their money from the savings bank.

Health helps us to enjoy life. It is hard to feel happy when we are sick. One of the richest men in America, who is fond of eating, is said to be unable to eat many of the foods he likes best because he has dyspepsia.



A HEALTHY CHILD STARTS THE
DAY SMILING

This makes him cross and fretful. He ruined his digestion by eating too much rich food.

Good health makes one better-looking. Have you ever seen any of your playmates after they had been ill? If so, you know how pale and thin they looked. What happened as they began to get well? Did you notice how round and rosy their faces became? Even beautiful girls and handsome boys will begin to look ugly and unattractive if they neglect their health. Good health usually means rosy cheeks, a clear skin, glossy hair, erect posture, and hard muscles.

Good Health helps you to be Successful in Everything. Have you ever seen a big building going up? Have you watched the men at their work? Often it is weeks or months before the building rises above the ground. Why? They are building the foundation. Every building needs a strong foundation. The tall skyscrapers are built away down on the solid rock beneath the earth. No building without a good foundation can stand.

This is true of success. It needs a solid foundation. That foundation is good health.

Everybody can learn to be Healthier. The best thing about health is that if we know how and try hard we can learn to be healthier. Boys and girls who really

want to be strong and well can improve, just as they can learn to improve in geography or spelling.

The way to do this is to form good health habits, such as sleeping long hours, playing in the open air, and drinking plenty of milk. Can you think of more ways?



ROOSEVELT FOUND SUCCESS THROUGH GOOD HEALTH

Roosevelt's Message to Boys and Girls. We know that health can be won, because so many people have done it. Roosevelt is a good example. As a little boy he was not strong. His friends thought he would never be able to go to college nor grow into a robust man, but he did. He

lived out of doors, played out of doors, and kept his mind clean and wholesome. He won the game of good health.

You know the rest of the story about Roosevelt. He was known as the strenuous American. He grew so strong and healthy that he became a famous horseback rider, a great hunter of lions and tigers, a brave soldier, and was the president of our country for about eight years. He never could have been the great American that he was unless he had learned to be healthy. If he could speak today, he would tell you to look after your health if you wish to be happy and successful.

Remember

It pays to be healthy because

It makes you happy.

It helps you in school.

It helps you in play.

Can you think of other reasons why it pays to be healthy?

Things to Do

1. If you are absent from school this month, keep count of the number of days and half-days. How many times were you absent because of sickness?

2. Make some posters on good health.

3. Take turns in your class in writing health slogans or sayings. "Good health pays" is a slogan. Think up some that are not found in the chapter. Try to have a new health slogan to put on the blackboard every day.

Review and Thought Questions

1. Is there any fun in being sick? Why? Is anybody ever to blame for being sick? Explain.
2. How does good health help at school? If other children are sick and stay out of school, do they help or hinder you? How?
3. Why is good health necessary for boys and girls who play on teams?
4. Is it worth while for a farmer to look after the health of his horses, pigs, cows, hens, and sheep? Why? Do you know some of the things that are done to keep farm animals healthy?
5. Why is the foundation of a building very important? How do the workmen try to make it strong? In what way is good health a foundation for life?
6. How was Theodore Roosevelt helped to be a great American by learning to be healthy?

CHAPTER II

HEALTHFUL HABITS LEAD TO GOOD HEALTH

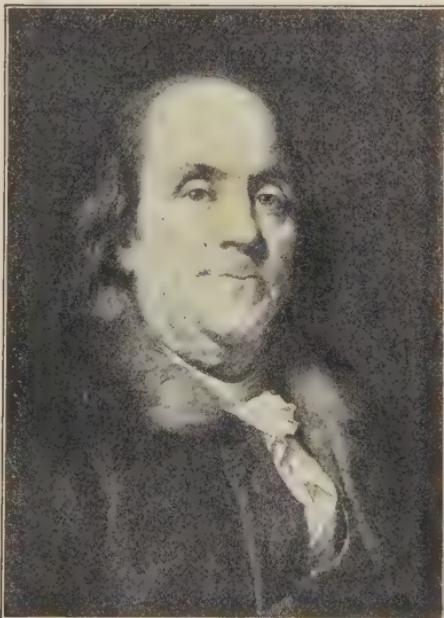
Doing is Better than Knowing. Benjamin Franklin was very fond of books and spent most of his spare time in study. Although he was the son of a poor soap-boiler and had to make his own way in the world, he daily grew in knowledge and became one of our most famous Americans. In both Europe and America he was known as a very learned man.

One day he decided that he would become perfect in his moral living. To his surprise he found that although he knew, or thought he knew, the difference between right and wrong, it was not easy to do the one and avoid the other. Knowing was not doing.

Many of us, like Franklin, have found that simply knowing anything is not enough. We need to practice what we know. We may know that eating green vegetables is good for us, but what we need to do is to eat them. Doing even more than knowing is necessary for success.

How Franklin formed Habits. Franklin had trained himself well in knowing; now he decided to give him-

self a thorough training in doing. He hit upon a plan for examining himself in what he did every day. There were thirteen habits which he wished to form. On July 1, 1773, he took a little book and set apart a page for each of the virtues which he wished to practice. He then ruled the pages as shown on page 10. Each evening he put down a black spot for every fault he had committed through the day, with special attention to the habit which he wished to form that week. He tried especially hard during that week to have a clean record for the habit in which he was giving himself special training. If



BENJAMIN FRANKLIN WAS SUCCESSFUL BECAUSE HE TRAINED HIMSELF IN GOOD HABITS

you will look at the page from Franklin's book, you will see that he had a clean record for temperance. The second week he would try to practice silence, the third week order, and so on. Franklin tried to keep his page free from spots. His hope was that some day he might

have a clean page. He had a hard time with his third habit, order; but day by day with the help of his chart shown below he found that he was on the road to success.

TEMPERANCE							
EAT NOT TO DULLNESS; DRINK NOT TO ELEVATION							
	S.	M.	T.	W.	T.	F.	S.
T.							
S.	*	*			*		*
O.	*	*	*	*		*	*
R.			*			*	
F.		*			*		
I.			*				
S.							
J.							
M.							
C.							
T.							
C.							
H.							

Habit makes Doing Easy. We now know that Franklin was right in thinking that when you once do a thing you find it easier to do it again. Have you noticed that the first time you take a cool sponge bath in the morning

you may find it very disagreeable? The water is so cold it makes you shiver, although you do enjoy the brisk rub with the rough towel afterwards. The next morning it is less disagreeable. In a few weeks you like the cool bath so well you wouldn't give it up. Doing it every morning, without missing, has made it easy and pleasant.

If you keep on doing a thing long enough, it will be so easy that you will do it without trying or thinking. Then you call it a habit. Can you think of some habits you have that you no longer need to think about?

Make your Habits your Friends. All of us have many habits. Some are good and some are bad. Perhaps we have the habits of cleaning our teeth, practicing our music lessons, drinking milk, and being polite. Some children have the habits of going to the table with dirty hands, putting their fingers in their mouths, and running in front of automobiles when crossing the street.

No matter whether these habits are good or bad, they are very close companions. When they are well formed, they are so close that we find it almost impossible to get rid of them. Have you heard the story of a working-man who was once a soldier? One day he was walking along with his full dinner pail when somebody thought he would have some fun. He cried out in a loud voice, "Attention." At once the man put his hands down at his

sides with the fingers out straight, just as he had done in the days when he was a soldier. His dinner pail rolled into the gutter. This shows how habits become a part of us and cling to us for a long, long time.

If our habits are good friends, they will protect us easily without our thinking; if they are our enemies, they will do us much harm. Healthful habits are among our best friends. They help us to be successful in everything we try to do in life.

Among the habits that Franklin tried to form, in the order given on the score card, were Temperance, Silence, Order, Resolution, Frugality, Industry, Sincerity, Justice, Moderation, and Cleanliness.

Unfortunately Franklin did not set out to form all the health habits that many boys and girls in America are trying to form today. His essay "A Dialog with the Gout" suggests that in the later years of his life he often ate unwisely and failed to get enough exercise.

Practice Every Day. If you can remember to practice a habit every time you should, it will soon be formed. In a few weeks you will not need to try to remember. You will do it every time without thinking.

It is important to remember. Every time you forget makes it harder for you to remember next time; and then it takes longer to learn.

Did you ever try to get up in the morning when the alarm went off or when mother called you? One morning, perhaps, you felt very sleepy, and said to yourself, "I will take just a little nap." You slept until mother called to you very loud. The next morning you found it easier to take another nap, and finally you slept without even hearing the alarm or mother's first call. Instead of forming a good habit, you have formed a very bad one. It will take longer now really to learn to get up when you should in order to have plenty of time to eat your breakfast and be in time for school.

Sometimes our parents or our friends may help us to remember. In some way we must remember if we are ever to form good habits.

Keep a Health Record. One good way to learn to remember is to follow the example of Franklin and make a record every day of what we do. On page 14 you will see a record kept by the Health Crusaders of the National Tuberculosis Association.

You have heard about the knights of old. Clad in metal armor and mounted on swift horses they rode forth to battle for God and country—for everything that was good and true.

The knights of the metal armor and swift horses are no more; but in almost every part of the world there are

thousands and thousands of boys and girls in the children's great army of peace, the Modern Health Crusade.

DAILY CHORES	S	M	T	W	T	F	S
1. I washed my hands before each meal. I cleaned my fingernails today.							
2. I brushed my teeth after breakfast and the evening meal.							
3. I carried a handkerchief and used it to protect others if I coughed or sneezed.							
4. I tried to avoid accidents to others and myself. I looked both ways when crossing the street (road).							
5. I drank four glasses of water but no tea, coffee, nor any harmful drink.							
6. I ate three wholesome meals, including a nourishing breakfast. I drank milk.							
7. I ate some cereal or bread, green (watery) vegetable and fruit, but ate no candy nor "sweets" unless at the end of a meal.							
8. I went to toilet at my regular time.							
9. I tried to sit and to stand straight.							
10. I was in bed eleven hours last night, windows open.							
11. I had a complete bath and rubbed myself dry on each day of the week checked (x).							
Total number of chores done each day.							
Total number of chores done each week.							

The children in this mighty army train themselves in good health habits. It is fun to win battles for good health!



THESE CHILDREN ARE BEING MADE KNIGHTS. THEY HAVE KEPT THE
RULES OF THE HEALTH GAME

The Cry of the Modern Health Crusaders. Listen to them as they march along:

"In days of old, Crusaders bold
Rode forth to fight the foe.
And we today, as brave as they,
Forth to the battle go.
Let's fight for health and happiness,
And on each trusty blade
We'll write the glorious motto, *Health*.
Hurrah for our Crusade."

What Health Chores are you Doing? Whether you are a health crusader or not you would like to be a strong and healthy boy or girl. If you begin to keep a record of the health chores, you will soon find out which ones you need to work on hardest. Keeping the record will help you to remember. Study the health record very carefully.

Healthy Children gain in Height and Weight. The health crusaders also keep a monthly record of their weight. This is very important.

Every child wishes to grow taller and to weigh more. Nobody cares to be dwarfed or stunted. Look at the table in the Appendix to find out how much you should weigh for your height and age. If you are 10 per cent or more below the average weight, it may mean that you are not doing your health chores. If you are doing the health chores faithfully but are still much below the average weight and do not gain, it may mean that you ought to go to a physician to get some advice.

Here are some facts about height and weight that every boy and girl ought to know:

1. Every healthy child gains in weight during the school year.
2. A healthy child does not always gain every month.
3. Gaining steadily in weight is usually a sign of good health.

4. Losing weight for several months or failing to gain in weight is a sign of ill health.

5. We often take after our parents. If they are tall, we are tall. If they weigh what they should, their children are likely to weigh what they should.

6. Height and weight depend somewhat on nationality. Notice the difference between Italians and Norwegians. Italian children are almost always shorter and weigh less than Norwegian children.

7. Good health habits, like drinking milk and playing in the open air, help us to gain.

8. If we practice all the health chores but do not gain in weight for several months, we need to see a doctor.

Remember

1. It is important to know about the ways to be healthy.
2. Bad habits may in time break down your health.
3. Good habits are the foundation of health.
4. Healthful habits are more important than knowing about health.
5. Healthy children grow in height and weight.
6. What else can you remember from this chapter?

Health Habits

1. Practice the eleven chores given on the score card until they become habits.

2. Pick out the chores that you most need to practice; then practice them until they are habits.
3. Think of some other good habits you need to form.

Things to Do

1. Get weighed once every month on the same scales and on the same day of the month.
2. Have your height measured (in your stocking feet) at least twice a year, about September 1 and February 1.
3. Keep a monthly and a yearly record of your height and weight.
4. Keep a record of daily chores.
5. Decide on some other things to do.
6. Consult the Height-Weight-Age Tables on pages 248-249. They will tell you about how much you ought to weigh.
7. Read "A Dialog with the Gout" by Franklin. Tell the class about it.

Review and Thought Questions

1. What methods did Franklin use in forming good habits? How many of his habits mentioned were health habits? Mention health habits that Franklin might have had in his list?
2. Why is it important not to miss even once in practicing a habit?
3. How can we do things without thinking about them?
4. Why does each of the eleven chores tend to form a habit which makes for health? Discuss each chore separately.
5. What is meant by making habits our friends?

CHAPTER III

KNOWING ABOUT THE HUMAN BODY

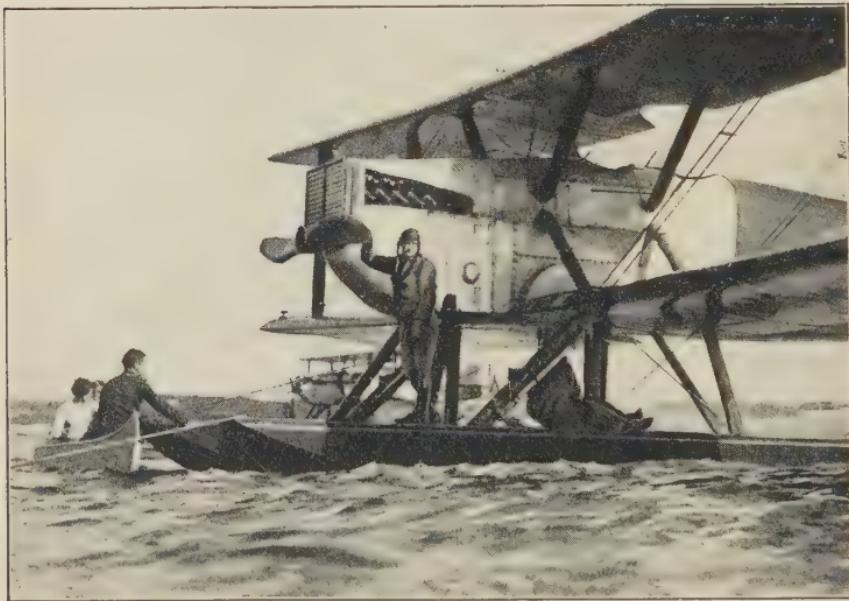
A Birdman. The picture on the following page will introduce you to one of America's famous aviators.

He is one of the world's greatest aviators. If you could watch him as he begins a long flight, you would be surprised to see how easily he starts his huge aëroplane. It glides off into the air and sails away so rapidly that it soon looks like a mere speck in the sky.

Sometimes he turns a complete somersault in the air. At times, when he sees a dark thundercloud, he turns the nose of his aëroplane upward to ride far above the clouds. Down below him the rain is falling in sheets and the earth can no longer be seen.

You may wonder how he dares to do such dangerous things. It is not nearly so dangerous as it looks. First of all, the aviator knows his machine. He never starts out on a long flight without looking all over his machine to see that every part is working just right. He knows it so well that he can take good care of it. Then, of course, he understands exactly how to run the aëroplane, because he has had many months of careful training.

One of the things that must be kept in good working order if there is to be successful flying is the aviator's body. His body, like the aëroplane, is a machine, but it is a wonderful machine that feels and sees and thinks.



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THIS MAN FLEW AROUND THE WORLD. AN AVIATOR NEEDS TO KEEP
HEALTHY TO TAKE LONG AND DANGEROUS FLIGHTS

If the aviator has poor eyesight, is in need of sleep, or drinks alcoholic liquors, he may meet with misfortune.

Not only the aviator but every other person needs to know enough about his own bodily machine to take proper care of it. Without such knowledge and skill he cannot expect any great degree of success in life.

This book will tell you more about your own body so that you may be better able to keep in good health.

Parts of the Human Machine. If you look at any machine, such as the meat grinder in your mother's kitchen, you will notice that it has many divisions and parts. Each of these has some special work to do. Sometimes the breaking or losing of a tiny screw will make the whole machine useless.

The human body is much more wonderful than any machine you know about. The fact that it is a human machine, that it is alive and runs itself, makes it wonderful.

The first division of the body that we want to talk about is the head and neck. The great cavity of the head is that which holds the brain, the organ with which we think. This division contains also the eyes, ears, mouth, nose, tongue, and teeth. In the neck are two very important tubes, the breathing tube, or windpipe, and the swallowing tube, or esophagus.

The second great division is the trunk. This is divided into an upper part, the chest or thorax, which is encircled by ribs, and a lower part called the abdomen and pelvis. In the thorax are located the lungs and the heart. In the abdomen are found the liver, stomach, intestines, pancreas, kidneys, and spleen.

Another great division of the body is the limbs consisting of the arms and legs. These are important, since we should not be able to handle things or to move about without them.

In the pages and chapters that follow you will learn more about the various parts of the body and what we can do to keep them in good running order.

The Bones support the Body. Have you ever seen a house or a barn or a store being built? If you have, you noticed that one of the very first things the workmen did was to put up some pieces of wood or iron, called the framework. From this framework you could tell how tall the building was to be and something about its shape. The framework is so important that if any part of it breaks, the whole building may topple down.

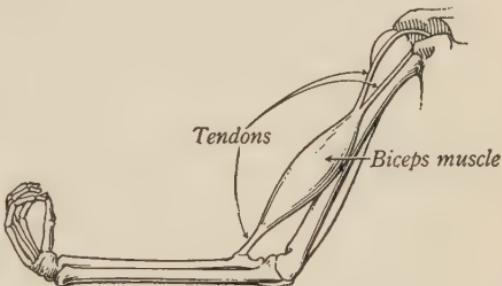
The body also has a framework of over two hundred bones, called the skeleton. These bones give the body shape and beauty. If some of them, such as the bones of the arms or the legs, were soft, we might have arms and legs that were crooked, ugly, and useless.

The Use of the Joints. Wherever two bones meet, there is a joint, or hinge. Most of the joints are movable, but some, like those of the bones in the head, are not movable. Some of them, like the joints in the fingers, move in two directions only. Others move in several

directions. The joint at the shoulder is of this kind. Swing your arm around so that it makes a circle, and you will see how this joint differs from the one at the elbow.

If there were no movable joints, we should find it impossible to walk or talk or do many of those things in life that we think of as necessary.

The bones are held together by strong cords called ligaments. Other stout cords, called tendons, tie the muscles to the bones. If you will feel of the inside of your arm at the elbow, you will find the tendons that move the forearm. Tendons can also be plainly seen at work in the wrist.



CAN YOU FIND ANY OF THESE BONES, MUSCLES, AND TENDONS IN YOUR OWN ARM?

The Muscles for Action. One of the chief differences between dead and living things is this: that dead things are motionless, and living things can often move themselves. The sand and pebbles at the bottom of the pond are moved by the waves. They cannot move themselves. How different it is with the fish that sees you on the bank and then darts quickly away among the weeds and stones! The fish could not move, and boys and girls could not run

and jump, without muscles. Muscles are not used in play alone; they also do most of the world's work.

If you will grasp your right arm a little above the elbow with your left hand and raise and lower your right hand, you will feel how your muscles work. Muscles may make themselves long and thin or short and thick. Can you feel two muscles, one in the front part of the arm and the other at the back? When you lift your hand, which muscle becomes short and thick and which becomes long and thin?

Nerves carry Messages. We have already spoken about the brain, which makes it possible for us to think. From the brain there are silvery threads, called nerves, that run out to all parts of the body. Some of these nerves send messages to the brain and some carry messages out to the muscles.

When you made up your mind to bend your arm, the brain sent a message down to the muscles of your arm, and the muscles that lift the hand began to pull. Every time we do anything, whether it is to wink our eyes or swallow our food or play the piano, the nerves are busy carrying messages.

Remember

1. To keep your bodily machine in good order you need to know something about it.

2. The great divisions of the body are the head and neck, the trunk, and the limbs.
3. The bones are the framework. They support the body.
4. The muscles move the bones.
5. The nerves carry messages to the brain and to the muscles.
6. Write a list of other important things to be remembered.

Health Habits

Spend at least a half-hour each day playing in the open air. It is only by exercising the muscles that we can make them strong.

Things to Do

1. Find the bones of the arm, the forearm, the wrist, and the hand.
2. Find the arm and hand muscles.
3. Find as many immovable joints as you can.
4. Find as many joints as you can that move in only two directions; that move in several directions.
5. What other parts of the human machine can you name and locate?

Review and Thought Questions

1. Tell why an aviator is able to manage his machine well.
2. Why are the bones firm, solid, and heavy?
3. How do the muscles pull the bones?
4. Why does a tooth ache?

CHAPTER IV

WHY WE NEED FOOD

How the Race was Won. The Mississippi, as you have learned from your geography, is a very large and very long river. Many cities and towns are found along its banks. Thousands of ships go up and down the river carrying passengers and freight.

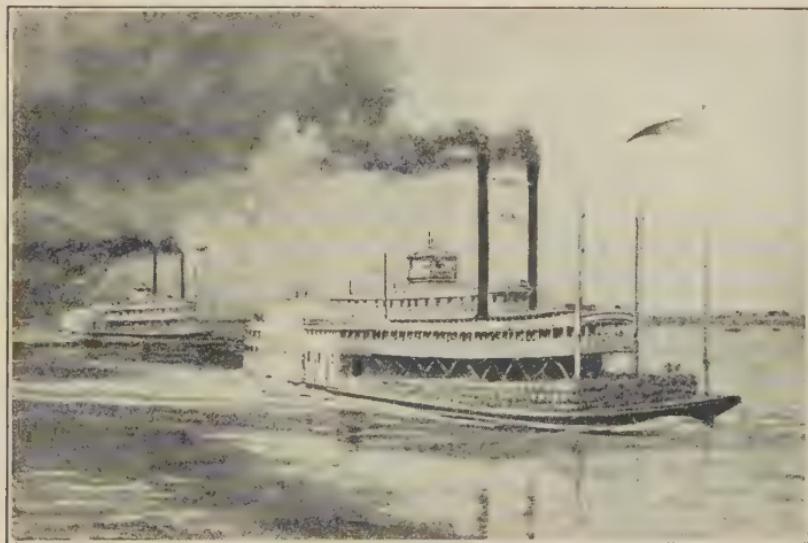
Many years ago these ships had much fun racing. In those days they burned wood in their engines.

One day, early in the morning, two ships found themselves close together. They were called the *Natchez* and the *Robert E. Lee*. The engineers began to pile wood on their fires, and a race began. Several hours went by. The captain of the *Robert E. Lee* began to grow fearful. He was losing in the race. His wood was giving out. Everybody on board was very much excited. He felt he just must beat the *Natchez* into the next port, several miles away.

In his desperation he ordered large quantities of meat from the cargo brought up to feed the fires. How greedily the flames licked the meat! How rapidly the steam filled the boiler!

The *Robert E. Lee* steamed ahead and won the race. This story shows that food may be fuel for an engine. It is also fuel for the human body.

Food provides Energy and Warmth. If you have ever been near the locomotive of a big passenger engine on



A FAMOUS RACE

The winning boat burned food for fuel

the railroad, you have seen the firemen open the big door and shovel in the coal. How red the coal looked in the big fire box, and how the hot flames burst through the door!

Coal is the food of the big engine. Without the burning coal there would be no heat to turn the water in

the boiler into steam to drive the huge train over the steel rails. To be on time the engine must have good fuel.

The body is something like an engine. It is not made of metal, but of bones and flesh and blood. It needs to keep warm, and our hands and feet and different parts of our bodies must move if we are to do anything in work or in play.

The body, like the engine, needs fuel, or food. It cannot use coal, but it can use milk, bread, lettuce, potatoes, and meat. You probably know that after people have been seriously ill they have little strength or energy. They have been without much food for a long time. We find that in cold countries people eat much more food than in warm countries because they need to keep warm. They are especially fond of fat. It is for this reason that Eskimo children will devour great chunks of seal fat.

In many cities it has been found that a large number of children go to school in the morning without their breakfasts. Without a good supply of food as fuel they are not well fitted to begin the day's work.

Food for Growth and Repair. The belching engine on the passenger train is different from the human body in at least two ways: first, it never grows. It keeps the same size that it had the day it was made. Second, when it wears out and gets out of order it cannot repair itself.

How much more wonderful is the human body!

When you cut your hand with a knife or burn yourself on the stove, the injured part may smart and be very painful, but in a few days you will see that the cut or burn is healing. New skin takes the place of the old, and finally the injured part is as good as new. The body has repaired itself.

You know that you are taller and weigh more today than you did a year ago. We keep on growing until we are men and women.

We now know that boys and girls cannot grow up to be strong and healthy unless they have good food and enough of it. Food is necessary for both the growth and the repair of the body.

The records of thousands of boys and girls in the United States show that one in five is below a certain standard of weight for his or her age. Many of these



THE RIGHT WAY TO BEGIN THE DAY IS
TO EAT A GOOD BREAKFAST

children who are below weight are not in robust health. Often this is due to their not eating the right kind of food.

Some children are far too fat because they eat too much or because they eat the wrong foods. Overfat children are not in robust health.

Food satisfies Hunger. Do you remember a long walk you once took in the cool, bracing air? Perhaps you were camping out. How good the food looked, and how much you ate for supper!

You did not think much about it at the time, but you probably know that hunger is a sign that the body needs food. It's fun to be hungry when we can get food, because everything tastes so much better.

Not to be hungry at mealtime is usually a sign either that we are ill or that we have not formed good health habits, such as playing in the open air and sleeping with our windows open.

Have you ever noticed how much happier you felt after eating a good meal if you ate quietly, slowly, and did not eat too much?

Digestion is Preparation of Food for Use of Body. The first step in changing the food so that it can be turned into warmth, energy, growth, and repair is called digestion. The story of the way in which fruit, vegetables, bread, and milk become useful to the human body is long

and interesting. We need to know something about it to understand what to eat and how to eat. Nobody is likely to be happy without a good digestion.

Digestion starts in the mouth. Let us begin our study there.

Remember

1. We need food to satisfy hunger.
2. We need food to provide energy and warmth, for growth and repair.
3. Hunger at the proper time is a sign of health.
4. Children who eat too little, or who eat the wrong foods, or who do not eat breakfast, are apt to be underweight.
5. Children who are very much underweight often do not keep up in their class work easily. They do not resist disease well. They are not in robust health.
6. Write a list of other important things to be remembered.

Health Habits

1. Eat three meals a day, but do not eat between meals.
2. Eat quietly and slowly.
3. Eat staple, plain foods, such as milk, meat, bread, cereals, vegetables, and fruits. Eat no highly-seasoned foods. The habit of eating large quantities of sweet foods makes plain, wholesome foods taste flat.
4. Drink neither coffee nor tea.
5. Play enough to get good and hungry at mealtime, but quit in time to quiet down before eating.

6. Do not play hard for one hour after eating.
7. What other health habits does this chapter suggest?

Things to Do

1. Keep a record of everything you eat for an entire day. Record also the amount. Discuss in class how the day's record might have been improved.
2. Study weight records to see how fast you are growing. Make a graph to show your own gain in weight. Make a graph to show the total number of pounds gained each month by your class.
3. Tell the story of the *Robert E. Lee* and the *Natchez*.
4. What other things does this chapter suggest?

Review and Thought Questions

1. Why do Eskimos eat fat?
2. Why did the *Robert E. Lee* win the race?
3. What do we get from our food?
4. What is the value of a good breakfast?
5. What do you mean by digestion?

CHAPTER V

WHAT HAPPENS WHEN YOU CHEW FOOD

Good Teeth help Boys and Girls. When the great World War began, there were many boys who wished to be soldiers and sailors. Thousands of them went on board the big battleships, and many of them went to France. There were many who wanted to go but whom Uncle Sam would not take. Do you know why? Uncle Sam said that boys who had lost many of their teeth or had many badly decayed teeth were not fit to fight for their country. How sorry they must have been that they had not taken better care of their teeth.

Having good teeth also helps children in school. In one of the big schools in Detroit, Michigan, the girls were divided into three groups: A, B, and C. The forty-two girls in Group A had almost perfect teeth, the fifty-six in Group B had some decayed teeth, and the seventy-three in Group C had very bad teeth. Can you guess which girls did the best work in school? I think you can. The girls in Group A had many more high marks than the others, and many more of them were promoted to the next grade.

Some owners of stores will not hire as clerks boys and girls who have dirty teeth. Every day it becomes harder for children who do not have good, clean teeth to get along in life.



EVERYBODY ADMires CLEAN, BEAUTIFUL TEETH

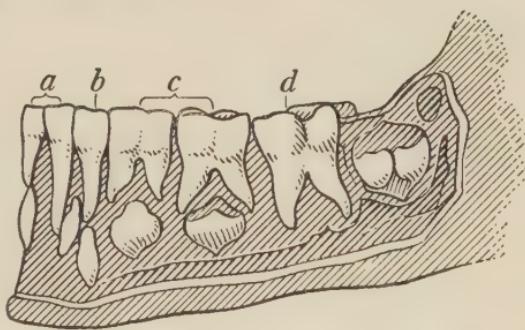
If good teeth are so necessary for success, we need to know more about them and how to keep them healthy.

The First Set of Teeth. Have you ever looked inside a little baby's mouth? If so, then you have learned that very young babies have no teeth. You know the reason. They live on milk and do not need teeth to chew their food. When the child is about five or six

months old, he may have his first tooth. When about two years old he has all his first teeth. There are twenty of them. They are often called the milk teeth. It is important that they be kept in good condition.

The Second Set of Teeth. The milk teeth are all right for young children; but as boys and girls become bigger, and their jaws grow, they need more and better teeth. Between the ages of six and twelve most of the second set appear. They begin to grow underneath the milk teeth and farther along the jaw where there are no teeth. Soon the milk teeth drop out because their roots disappear and the second set of teeth push them out.

The first of the second set of teeth appears just beyond the last milk tooth. It is called the six-year molar. Often children and parents think it is a milk



HALF OF A CHILD'S JAW AT THE AGE OF SIX YEARS

a, incisors; *b*, canine; *c*, molars; *d*, six-year molar, the first of the permanent teeth. The teeth below the gum are permanent teeth

tooth that will soon fall out, and so they do not take care of it when it begins to decay. But these teeth of the second set are not replaced when they are lost. For that reason they are called the permanent teeth. They are thirty-two in number. The last four appear when one is twenty years old or even older. These are called the wisdom teeth. There are four six-year molars.

How we Chew our Food. If you take a hand mirror and look at your teeth, you will see that they do not all look alike. There are different teeth to do different kinds of work. Notice the two long chisel-shaped teeth in the front of each half-jaw. These are the cutting teeth, or incisors. They cut much like a pair of scissors. Squirrels

have very sharp front teeth with which they cut open the hard shells of nuts.

Next to the cutting teeth you will see a long, rather round-shaped tooth. This is the holding tooth, or canine. In dogs and tigers it is a long tusk. This tooth helps to separate the food. If you will shut

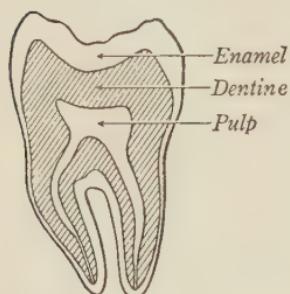
PARTS OF A HEALTHY

TOOTH

your jaws together, you will see that the teeth in the upper jaw come down in front of those in the lower jaw. They guide your jaws so that the teeth will come together in the best way to chew the food.

The other teeth are cup shaped at the top; they crush and grind the food. Those with the small cups are called bicuspids; those with the larger cups are molars.

The Study of a Tooth. The top of every tooth is called the crown. It is covered with enamel, the hardest substance in the body. Just below is the dentine, a softer,



bony material. Most of a tooth is hard, dead material; but in about the center of the tooth, running down into the root, is the pulp, where there are blood and nerves. Decay or any other injury to the pulp causes toothache.

The First Station on the Food Route.

One reason why a healthy mouth is so very important is that in the mouth begins the interesting journey over the food route. As the food passes along it is changed in many ways so that it can be made into muscle, bones, fat, blood, and everything that makes up the human body. It is only as the food is changed in this way that we get strength to run, swim, ride horseback, move about, or even to think. The first step in this change is called digestion.

In the mouth are taste buds. These are little nerve endings which are necessary for taste. The vapors from the foods go up into the nose, where the nerves of smell are. In this way smell helps to make our food taste better. This adds to the pleasure of eating, and happiness at mealtime aids digestion.



SALIVARY GLANDS

a and *c*, some of the salivary glands that manufacture saliva; *b* and *d*, ducts that carry saliva to the mouth; *e*, the tongue

The mouth is a wonderful piece of machinery, which tears and grinds the food into small pieces. A healthy tooth is remarkably strong. Men with good teeth have been known to bite with a force of three hundred and fifty pounds. Besides changing the food by grinding and chewing, another change goes on in the mouth. The starch in the food is changed into sugar. Bread is a starchy food. Chew a piece for a long time and it will seem sweeter. A change has taken place. The body cannot make use of starch until it is changed into sugar. Then it may serve as heat and energy.

A liquid in the mouth, called saliva, starts this change of starch into sugar. The saliva is manufactured by glands. Sometimes when you have had a cold you have noticed that some of these glands were swollen. There is one below each ear, two under the lower jaw and two under the tongue. The saliva flows from the glands through little pipes into the mouth. It not only changes some of the starch into sugar, but it moistens the food so that it can be swallowed easily.

Drink Plenty of Water. Not only our saliva but our blood and a good deal of the body are composed mostly of water. This means that we need to drink plenty of water every day. We need water to help us grow, just as plants need moisture. It is a good plan always to

drink one or two glasses between meals. It is better not to drink while food is in the mouth, since saliva is less likely to mix with the food. If starchy foods, like crackers, are washed down with water, the saliva has no chance to mix with the food and begin to change it into sugar.

CHEW YOUR FOOD THOROUGHLY. If we do not take time to chew our food well, it has no chance to mix with the saliva, and as it passes on, the stomach has harder work to do. Eating one's food too fast is a very bad habit. It often develops because children do not get up early enough in the morning to eat breakfast comfortably or because they do not go to the table promptly when they are called.

Gladstone was a famous Englishman who lived to be a very old man. He is said to have formed the habit of



EXERCISE AND CHEWING HIS FOOD WELL
HELPED GLADSTONE TO BE HEALTHY AND
LIVE LONG

chewing each mouthful of food forty times. Probably that was more times than are usually necessary, but good health requires thorough chewing.

Remember

1. Chewing the food starts digestion. It moistens the food, breaks it up, and changes some starch into sugar.
2. The saliva is made by six salivary glands.
3. The tongue is used for tasting, keeping the food between the teeth, and for talking.
4. There are twenty milk teeth and thirty-two permanent teeth.
5. The six-year molar is a permanent tooth. If one is lost, another will not grow in its place.
6. The teeth are the only exposed bones in the body.
7. The enamel helps to keep the teeth from decaying.
8. The bony part of the tooth is called dentine.
9. What other things do you remember from the reading of this chapter?

Health Habits

1. Chew your food thoroughly.
2. Drink plenty of water, but do not drink when there is food in the mouth.

Things to Do

1. Find your own incisors, bicuspids, canines, and molars.
2. See if you can find your own six-year molars.

3. See if you can find where some of your own milk teeth have fallen out and some new teeth are coming in.
4. Go to the blackboard and draw a picture of a tooth, showing the enamel, dentine, pulp, and roots.
5. If there is a baby in your family, find out how old he is and how many teeth he has.

Review and Thought Questions

1. Why is it that babies two years old have perfect, regular teeth, and children ten years old have imperfect and irregular teeth?
2. How may good teeth help children in school?
3. Why do you think that merchants would rather hire clerks who have good, clean teeth than those who have dirty and decayed teeth?
4. What happens to the food in the mouth?
5. What is the harm in washing down our food?
6. What are the different parts of a tooth?
7. What is the use of the saliva?

CHAPTER VI

HOW TO TAKE CARE OF YOUR TEETH

Unseen Enemies in the Mouth. Toothache and the loss of teeth are caused by decay. We are quite familiar with rotting, or decay. Wood, plants, vegetables, and meat decay. If we could look through a microscope, which makes everything appear larger than it really is, we should find out that decay is caused by very tiny plants, often called bacteria, or germs.

Some of these bacteria are friends of man. Think what a world this would be if nothing ever rotted! Year after year the leaves would pile up so high under trees that finally the trees would die. The dead grass would collect until the tender grass in the spring was choked.

But the bacteria of decay in the mouth are our enemies. We need to know how to fight them.

Decay often Hard to see. People sometimes think that decay begins inside the tooth, because the first idea of decay comes when the enamel wall breaks in. The illustration on the next page shows how the decay may begin no wider than a thread and go downward, forming a big cavity and at last reaching the pulp. Then

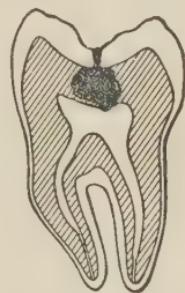
there will be toothache. Many times the decay may be so bad that the tooth must be pulled. To protect our teeth, we ought to go to the dentist about once every six months. The dentist has very keen eyes and is able to see decay when it first begins.

Decaying Teeth make Poison. Not only does decay cause us pain and the loss of our teeth, but the bacteria manufacture poison. We now know that this poison often causes headache and sometimes rheumatism.

Good Food necessary for Sound Teeth. Our teeth, like all other parts of our bodies, are made from the food we eat. The teeth are the hardest part of the body and need foods containing lime and other minerals. Milk, fruit, and vegetables are excellent foods for the manufacture of good teeth.

American children use their toothbrushes more than the children of any other country, yet they probably lead the world in the number of decayed teeth. This proves that eating proper food is even more important than cleaning the teeth.

When Italian children reach America they usually have very good teeth; but their brothers and sisters who are born here and eat American food have just as poor teeth



HOW A TOOTH
OFTEN DECAYS

as American children. One reason why Italian children have such good teeth in their own country is because of their fondness for fruit, vegetables, and milk. Such foods should be eaten plentifully from early childhood.



THE SQUIRREL HAS GOOD TEETH. HE EATS HARD FOOD

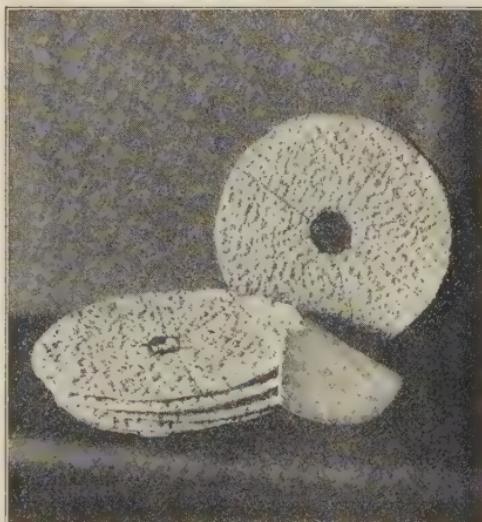
Avoid too many Sweets. Not only do the Italians, Greeks, and many other foreigners eat in their own countries food that contains much lime and other minerals, but they eat little sugar. The overeating of sweets is probably one of the very worst habits that Americans have. The sugar bowl is really unnecessary. The American Indian had no sugar bowl, candies, or cakes, and he had excellent teeth.

We now know that the body gets enough sugar from natural foods, such as fruits and milk. After we eat sweet food in the form of candy and pastry some of it is apt to be left in the mouth. The bacteria which grow in the soft, sugary, and starchy food in the mouth make acids which dissolve the lime in the teeth and cause decay.

Chew Hard Food. One reason why the Indians had such good teeth is that they ate hard food. Often when the Indian went on a long hunting trip he carried in his pouch some parched corn. This was his only food. To chew it he had to use his teeth. This exercise of his jaw and teeth made them healthy.

Many dentists have thought that some day we might lose our teeth because we use them so little. Most of our food, as it comes from the store and as it is cooked, is so soft that it does not need any chewing. We are quite likely to find fault with our food if it is so hard or tough that we really need to chew it. We should form the habit of eating hard toast, especially the crust, and other hard foods that need chewing.

Hard, Rough Food cleans the Teeth. Savage peoples and animals seldom have decayed teeth because their hard, rough food scours the teeth and keeps them clean. The



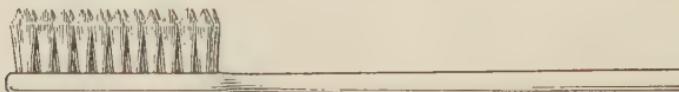
SWEDISH BREAD

One reason why the Swedish people have such good teeth is because they eat hard bread

parched corn and rough corn meal of the Indian made toothbrushes unnecessary. We eat too much soft food.

There is a saying "as clean as a hound's tooth." Dogs fed on ordinary rough food have teeth that seem to be polished. They seldom decay. Dr. P. R. Howe proved that if an animal is fed only on the soft food which we use, his teeth will get dirty and decay.

Bread made from coarse flour is excellent for the teeth. If you ever tried to eat Italian or Swedish bread sent



WIDE-AWAKE BOYS AND GIRLS OWN AND USE A GOOD TOOTHBRUSH

from Europe, you found it made your jaws tired. It is fine for the teeth. Everybody can eat hard toast.

Need of Cleaning the Teeth. Even by eating the best kind of food it is almost impossible not to have some decayed teeth. We need to brush our teeth to keep them clean, for clean teeth are less likely to decay.

Why we need to care for our First Teeth. Some people think that because the first teeth soon fall out it is not necessary to take any care of them. They do not keep them clean nor have them filled when they decay. This is a mistake because (1) these teeth are needed to chew the food; (2) if some of the milk teeth fall out before

the new teeth are ready to appear, the jaw and the other teeth will not grow properly and the second teeth may come in a crooked line; (3) these teeth, if decayed, cause toothache and make it hard to be happy and successful



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A TOOTHBRUSH DRILL

in school; (4) if the second teeth appear among decayed teeth and in a poisonous mouth, they are likely to decay.

Remember that every loss of a permanent tooth causes the cheeks to fall in slightly and mars the beauty of the face. We cannot afford to lose even a single tooth.

Cleaning the Teeth with a Toothbrush. Every time we eat, some of the food is left in the mouth. If it is allowed to stay there, it sticks to the teeth and makes the mouth acid. If the teeth are not kept clean, they will decay.



RINSING OUT THE MOUTH AFTER MEALS HELPS TO KEEP THE TEETH CLEAN

A child should use a small-sized toothbrush with the bristles arranged in ridges. It should be thoroughly rinsed after using and kept only for the owner's use.

The teeth should be brushed after each meal. The most important time is just before going to bed. If particles of food are left in the mouth over night, there is a good

chance for decay to begin. During the day drinking of water and the swallowing of saliva help to keep the mouth free from food. If you cannot brush your teeth after each meal, try to rinse your mouth out with water, forcing the water through your teeth.

Brush your teeth with warm water. Use powder or toothpaste at least once every day. Brush the teeth from the gums to the grinding surface. You cannot clean in between the teeth by brushing them straight across. Brush the outside surfaces, the inside surfaces, and the tops of the teeth. Do not forget to brush your gums and the roof of your mouth.

Cleaning the Teeth with Dental Floss. Teeth most often begin to decay in the surfaces next to other teeth. The food lodges between the teeth and is very hard to get at with a toothbrush. There is but one way to do this, and that is by using dental floss. We can buy this at the drug store. By drawing a piece of it between our teeth so as to scrape the sides we can give them a good cleansing. The dental floss should be used after meals.

Even with the best of care we need to have the dentist clean our teeth sometimes, because we cannot remove all the hard substance, called tartar, which makes our gums sore and causes the teeth to decay.

Remember

1. Decayed teeth make the mouth look ugly, cause pain, and make it harder to chew the food properly.
2. Decayed teeth cause sickness.
3. Too much candy and cake cause the teeth to decay.

4. Eating sweet foods and mushy pastry leads to decay.
5. It is very important to keep the milk teeth clean.
6. Write out a list of other facts worth remembering.

Health Habits

1. Eat sparingly of sweet foods.
2. Eat hard foods which must be chewed.
3. Clean the teeth with dental floss and wash the mouth after each meal if possible.
4. Brush the teeth at least twice every day.
5. Brush your teeth every night before going to bed.
6. Have the dentist look your teeth over at least once every year.
7. Wash your toothbrush after using it.

Things to Do

1. Show how to use dental floss.
2. Show how to brush the teeth.
3. Show how to wash out the mouth.
4. Make a drawing of the kind of toothbrush to use.
5. Finish this story: "My name is Johnny Squirrel. I have the best kind of teeth. I will tell you why they never decay."
6. Choose two children of your class to go around and look into every pupil's mouth. Let them write on the board what they find. How many have clean teeth? How many have decayed teeth?
7. Make some posters on clean teeth and health.
8. Write a rime on cleaning the teeth.

Review and Thought Questions

1. Why do we need good food to have good teeth?
2. What is the best kind of food for us to eat if we wish good teeth?
3. Is gnawing a bone a good thing for a dog's teeth? Why?
4. Give all the different reasons why we need to take good care of our first teeth.
5. Why should you clean the six-year molar especially well?
6. If we use a toothbrush often enough, do we need to use floss?

CHAPTER VII

HOW WE MAKE USE OF OUR FOOD

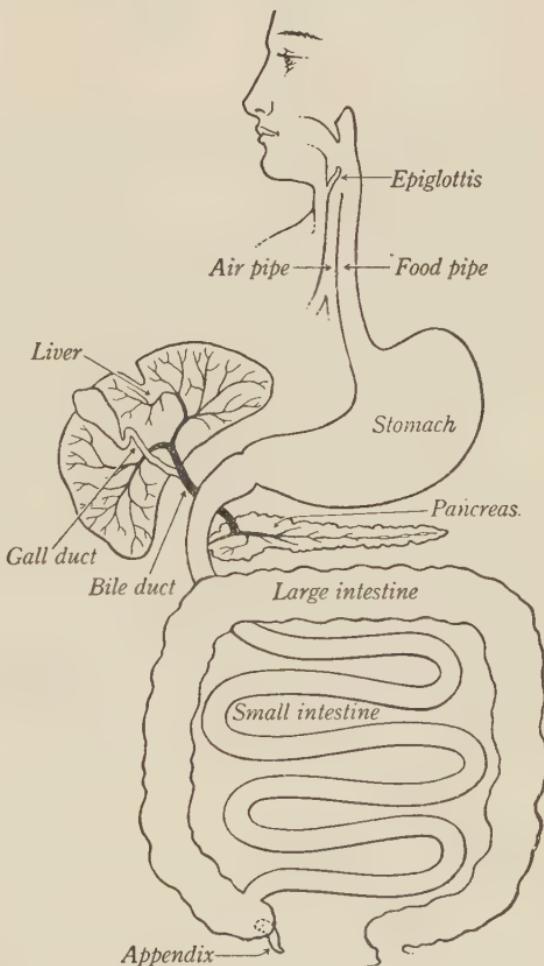
The Route to the Stomach. After the food has been chewed and mixed with the saliva, it is forced by the tongue and cheeks to the back part of the mouth. Here there are two tubes: one, an air pipe leading to the lungs; the other, a food pipe (called the esophagus) leading to the stomach. The first tube is the one we use in breathing. It has a little cover on it which opens and closes. This cover is called the epiglottis. It is always open when we are breathing and talking and laughing; but when we begin to swallow, the little door closes down tightly, so that food slides over into the food pipe.

Did you ever try to swallow your food while you were laughing? If you did, you may have found that it was hard to breathe and that you began to cough very hard. This was because the little door was called upon to do two things at the same time and was left part way open. The food went down into the air pipe, and you had to cough very hard to get it up.

You said, "Something went down the wrong way." The little door is so quick that this seldom happens.

What happens in the Stomach. As the food travels along the esophagus it finally arrives at the stomach. This is a large bag which holds about a quart. The walls of the stomach have very strong muscles which contract and expand so that the food is well mixed. When it is empty, it is more like a rag than a bag.

Through the inside lining of the stomach there now oozes an acid fluid called the gastric juice. This has no effect on the starches, but it does dissolve foods like lean meat, eggs, and beans,



THE ORGANS OF DIGESTION

As you read this chapter see if you can explain this drawing

which are rich in a substance called protein. Since fats are usually changed but little in the stomach, fried foods are slow in digesting. The gastric juice has hard work to get into particles of fried food, especially if it is not well chewed.

At the lower part of the stomach there is a gatekeeper called the pylorus. This is a circular muscle around the outlet of the stomach. It contracts (that is, draws up very tight) until the gastric juice has done its work and the small intestine is ready for the partly digested food; but when the food is well dissolved, the pylorus relaxes and allows the food to pass on into the small intestine, a small tube about twenty feet long. Some material (seeds, for example) cannot be digested. The ever-watchful gatekeeper allows such material to pass on.

The most important work of the stomach is breaking up the food so that it can be used by the body. The gizzard of a chicken is much better for breaking up food than the human stomach because it has thick and strong walls. That is why a chicken can eat corn and peas without chewing them.

The food stays in the stomach for two or three hours.

Being Happy helps the Stomach to do its Work. Dr. W. B. Cannon found, as he watched the stomach of a cat through the X ray, that when the cat was petted and

contented the stomach did its work well; but as soon as she was frightened, everything stopped.

From many other observations of animals and people we now know that being in a happy state of mind helps



HAPPINESS AT MEALTIME HELPS DIGESTION

digestion. When we enjoy our food and our companions, the gastric juice begins to flow into the stomach even before the food gets to it. Worry, grief, and anger may stop the flow very suddenly.

Telling stories at the table, laughter, and cheerfulness all help to make the best use of food.

How the Food is Digested in the Small Intestine. Although the digestion of starches and proteins is well begun as they leave the stomach, they are not yet properly prepared for the use of the body. The fats also have not been changed.

Three different digestive juices now are poured into the small intestine.

One of these is called the intestinal juice. It is secreted by glands and oozes through the inside wall of the intestine.

The second is called the bile. It is a green-orange fluid manufactured by the liver. As it is manufactured, it is stored in a sack called the gall bladder. Little pipes, or ducts, carry it to the intestine.

The third is called the pancreatic juice. It is manufactured by an organ that you have probably never heard of before, the pancreas. This juice also is carried to the intestine through a duct.

These juices together act on the fats and also on the starches and the proteins, breaking them up into smaller and smaller particles.

The Absorption of the Food. The inner lining of the small intestine looks smooth to the eye; but when observed under the microscope, it is seen to be very rough. It is covered with millions of fingerlike projections that

dip into the liquid food. These little projections are called the villi. They pick out certain parts of the food and change them so that the body can absorb them. The food, which is now thoroughly digested, enters the blood and is carried to all parts of the body. It may become a part of a muscle, a bone, a finger nail, or any other part of the body.

How the Food travels along the Intestine. The food passes along the small intestine very slowly so that it can be further softened and dissolved and then absorbed. It travels at the rate of about two inches a minute. We now know a good deal about the way the food travels, because physiologists have been able, by means of a wonderful discovery called the X ray, to see the stomach and intestines at work. This shows that the walls of the intestine contract and expand in such a way that the food is thoroughly mixed with the different juices and brought close to the villi, which are eager to absorb the best of the food. Gradually the contents of the small intestine work their way into the large intestine.

The Large Intestine a Storage Place for Wastes. Nearly everything that the body can use has been absorbed before it reaches the large intestine. The large intestine is not supplied with any digestive juices nor any villi for absorption. It is simply a storage place for wastes.

The Importance of the Habit of Daily Elimination. If allowed to remain in the large intestine for a long time the wastes become poisonous and dangerous to one's health. They often cause nervousness and headache.

To keep cheerful and in good health it is necessary to get rid of these poisonous wastes at least once every day. The best time to visit the toilet is just after breakfast. If possible, a regular habit should be formed of going at the same time every day.

Drinking plenty of water and eating vegetables, fruits, and whole-wheat bread help to form the right habits of elimination.

Remember

1. The food travels from the mouth to the stomach through the esophagus.
2. The stomach is a bag holding about a quart.
3. The work of the stomach is to break up the food (the action of the gizzard) and to make gastric juice.
4. The pylorus is the gate which is closed until the food is prepared for the small intestine.
5. There is no digestion in the large intestine; it is a storage place for wastes.
6. The body needs to rid itself of these wastes every day, to be healthy.
7. Write out a list of other facts worth remembering.

Health Habits

1. Have quiet, happy, contented meal hours.
2. Eat at regular times, so that the stomach and other organs of digestion may have rest.
3. Have a regular time for getting rid of the body wastes from the large intestine.
4. Avoid fried foods.
5. What other health habits will you form after reading this chapter?

Things to Do

1. Examine a chicken's gizzard brought from home. Notice the thick, muscular wall.
2. Write a list of foods rich in starch; in fat; in protein.
3. Find the epiglottis in the illustration on page 53. Find the other organs mentioned in this chapter.

Review and Thought Questions

1. What may happen if you try to swallow your food and laugh at the same time?
2. What is the use of the large intestine?
3. What foods help elimination?
4. How does anger affect digestion?
5. How do you plan to make your meals pleasant?
6. Can you think of a new joke to tell at the table tonight? What is it?

CHAPTER VIII

FRESH FRUITS AND VEGETABLES NECESSARY FOR HEALTH

How Cartier saved his Crew. You remember that after Columbus discovered America there were many expeditions which set sail from Europe to explore and settle in the New World. Often these ships were on the high seas for many weeks before they caught sight of land. Before they reached land their fresh fruit and vegetables were used up. Often the sailors became ill with a very distressing sickness known as scurvy.

Among the daring explorers of those early days was Jacques Cartier, who was the first to sail up the St. Lawrence River. While exploring this river twenty-six of his party fell sick with scurvy and died. The whole crew seemed in danger of losing their lives. In this time of danger they were cured of their illness by a drink made from fresh pine needles. Perhaps this was the first and only time that pine needles were used in this way. The juice of oranges, prunes, apples, or limes, or the juice from either fresh or canned tomatoes would have been better. Not having any of these Cartier used pine needles.

We now know that everybody needs a certain amount of fresh fruit or vegetables. Eating such uncooked food is necessary to keep people in the best of health.

Sometimes sailors at sea have been cured of illness by eating raw potatoes.

Eat Some Fresh Fruit or Vegetables Every Day. One of the best habits that boys and girls can form is that of eating every day some fresh vegetable like tomatoes or lettuce or some fresh fruit like an apple or an orange. Oranges are excellent with toast at breakfast time. They help children to grow.

Leafy Vegetables are best. Plants have three parts which serve as food: (1) the roots—such as beets, carrots, and potatoes; (2) the leaves—spinach and lettuce; (3) the seeds—beans and peas.

We need all three kinds of food in our diet; but leafy vegetables are necessary for growth and health, although they do not contain much starch, protein, or fat.



CARTIER

The daring French explorer who saved the lives of his men

One reason why the leaves are valuable in making children grow seems to be that they make the growth of the plant possible. They are the little laboratories which take certain substances from the air and combine them with water and minerals that come from the roots of the plant to make protein, starch, sugar, and fat. Then they are stored in the seed and stem. The leaf is the part of the plant that is most alive; when eaten, it helps children to be healthy and to grow.

Pigs fed plentifully on grain alone will not remain healthy and will finally stop growing or fattening, but if they are fed green weeds or green clover they speedily grow and become healthy.

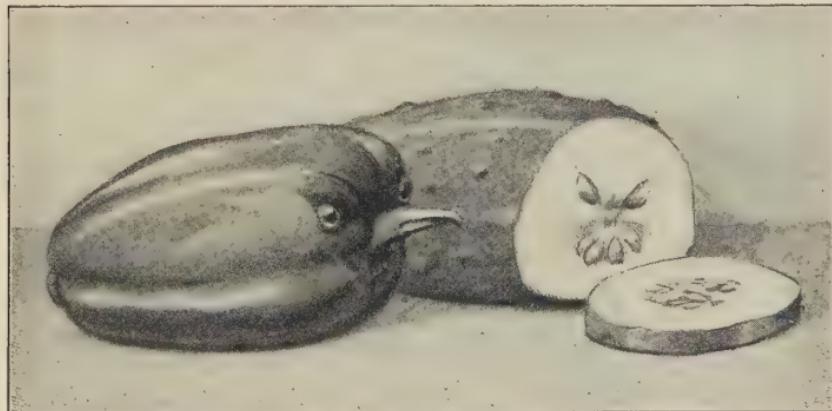
Lettuce and tender celery are good examples of leafy vegetables that may be eaten raw.

Leafy vegetables in the form of greens are excellent as cooked food. Beet tops, turnip tops, cabbage, dandelions, and chard should be eaten plentifully in season.

Other Vegetables Good to Eat. Potatoes are nourishing food and should be eaten every day. But at least one other vegetable should be eaten. Among the vegetables good for children to eat are dried or fresh peas and beans, onions, string beans, squash, cauliflower, asparagus, tomatoes, and carrots. There are many other wholesome

vegetables. When fresh vegetables cannot be had, dried and canned vegetables are desirable.

Vegetables to be Avoided. Not all vegetables are good for children. Green cucumbers and peppers are not easily digested and often cause illness. Green corn, too, should be eaten sparingly and not much before the age of twelve.



SOME VEGETABLES ARE NOT HEALTHFUL FOR CHILDREN

The reason green corn is not good food for young children is that they will not chew it enough to break up the grains.

Eating Fruit. Some sort of fruit should be eaten every day. Fresh fruit is very desirable; but if that cannot be had, dried or canned fruit is good. If fresh fruit is eaten, it should be very ripe, but not decayed. Bananas are not good until the skins are brownish. If served before this they should be cooked.

Why we need Vegetables and Fruits. There are several different reasons why fruits and vegetables are so valuable for health that we should have both of them every day.

1. They are likely to help us enjoy our meals and so aid digestion.
2. They contain water, which the body needs.
3. They contain many minerals, such as iron and lime, which are needed for the blood and bones.
4. They contain other substances which make for growth and help to keep us fit.
5. They are necessary for the daily elimination of wastes from the bowels.

How to cook Vegetables. If you have ever cut off the leaves of a beet so close that some of the beet itself was sliced off, or if you have ever cut off some of the fine roots, you have noticed that the beet bled. This is a poor way to get beets or similar vegetables ready to be cooked, because the juice of the vegetable contains many of the salts and minerals that our bodies need. These juices are often lost in the cooking. Even if vegetables are not cut in any way so as to make them bleed, some of the juice is likely to cook out into the water. Much of this waste can be prevented by cooking the vegetables only until they are tender.

One of the best ways to cook vegetables is to boil them. Soups with vegetables in them or vegetable stews are particularly good because then we are certain to get all the valuable juice. Both the juice which comes from cooked vegetables and the liquor in which they are cooked ought to be eaten, since they contain many minerals and food materials.

Baked potatoes are best, but potatoes are also very wholesome boiled with the skins on. Fried potatoes are less digestible.

Fruits and Vegetables eaten Raw should be thoroughly Washed. The fruits and vegetables we see for sale in the market often come a long distance over country roads and in trains where dust falls on them. They are also handled by a great many persons. Many of these persons have dirty hands, and some of them may be ill.



WASHING BERRIES WITH STRAINER

Berries need to be thoroughly washed before they are eaten

Even while the fruits and vegetables are in the market, there is also the possibility of dust from the street falling upon them and of their being handled by many people. Unless fruits and vegetables are thoroughly washed they may be the means of carrying disease. How should you like to eat a rosy-cheeked apple without washing it if you knew it had been handled by a very dirty man who was ill and seldom washed his hands? Oranges and bananas are called "safety-first fruits" because they come wrapped up in a thick cover. This is removed before the clean, well-protected fruit is eaten.

One good way to wash berries is to put them into a strainer and then turn on the faucet or pour water over them. Leafy vegetables like lettuce should be put into a big pan of clean water. Each leaf should be washed separately.

Learning to Like Vegetables. Few children need to be coaxed to eat apples or oranges or other fruits, but often children are not fond of some vegetables. This is very unfortunate, because vegetables are necessary for health. Usually children who do not like a particular vegetable have not liked its looks and have never eaten enough of it to learn to like it.

The first thing to do in learning to like vegetables is to make up your mind that you will like them. That

is half the battle. The next thing to do is to eat just a little of every kind of vegetable that comes to the table. Do not say when a vegetable is passed to you, "No, thank you, I do not like it"; say, "Yes, I'll have just a little." If you eat just a little of the thing you do not like, you will soon be dissatisfied with that small amount and will ask for more and more. By that time you will have learned to like vegetables.

Remember

1. Orange juice and other fruit juices and even pine needles help to make sailors healthy.
2. Vegetables and fruits make children grow, lead to health, and prevent disease.
3. Corn is not good for young children.
4. Meat and vegetable stews are excellent for children.
5. Greens are excellent for health.
6. Tomatoes are good, both raw and canned.
7. What other things do you remember?

Health Habits

1. Wash fruits and vegetables before eating them.
2. Eat some fruit and vegetables every day.
3. Train yourself to eat the vegetables and fruits you do not like.

4. Keep flies away from food.
5. Wash your hands before eating.
6. Name other health habits.

Things to Do

1. Wash an apple in a glass of clean water to show how much dirt was on it.
2. Show how peeling a banana "unwraps the package."
3. Make some health posters on fruits and vegetables.
4. Write some rimes on fruits and vegetables.
5. Visit each store in your neighborhood. Notice whether the fruit looked clean and whether it was protected from flies.

Review and Thought Questions

1. If you were lost in the woods and had nothing to eat but crackers and bacon, what fruits and vegetables might you find?
2. How does your mother prepare for the seasons in which she cannot get fresh fruits and vegetables?
3. What is the best way to cook vegetables?
4. Why are leafy plants good to eat?
5. Why do we need to eat fruit and vegetables?

CHAPTER IX

MILK THE GREATEST FOOD KNOWN

The Story of Adam. There are many Adams in America, but this particular Adam lived in Chicago. When he was fourteen years old, he wished to go to work. He was not given his working-certificate because he was in poor physical condition.

Adam was not sick ; but he was thin, his chest was flat, and his shoulders projected.

One needs to be strong and healthy to work in a store, mill, or factory. The doctor thought Adam was too frail to work.

Adam had been drinking almost no milk all his life. He began to drink a quart of milk every day. Besides eating wholesome foods, he went to bed at a regular time, got plenty of sleep, and practiced other health habits. He began to gain over a pound a week, and at the end of twelve weeks he was up to the average weight for his height.

Adam now found it an easy matter to get his working-certificate. He was prepared to try to do almost anything he wanted to do, no matter how hard it was.

Milk a Nearly Perfect Food. The knowledge that milk is so valuable for children that no other one food can take its place is one of the latest discoveries. We have long known that whole milk was rich in lime, protein, and



THE COW IS A FRIEND OF CHILDHOOD

fat, but we never knew until recently that all fats were not alike. The fat in milk is very valuable for growth.

The difference in foods for growth has now been proved many times in experiments with animals and children. The two dogs you see in the picture on the next page were the same size when they were born. They had the

same care and the same kind of food except that the larger dog had milk to drink.

Because of a great many experiments like this we know that there is something in milk fat, egg yolks, and leafy vegetables necessary for growth. Nobody has seen it, even with the most powerful microscope, but we know it exists. Scientists call it fat-soluble A. It is found in other foods besides those we have mentioned, but not in such abundance nor so easily.

Milk lacks only Iron. Milk is so nearly a perfect food that people who are ill can live on it for many weeks. But it is not a complete food. One reason is that it lacks iron, which we need for the blood. If we do not have iron we begin to grow pale and ill. Fortunately fruits and leafy vegetables have a fairly good supply of iron.

Newborn babies thrive on milk alone for a long time because they have enough iron in their bodies at birth



Courtesy of the National Dairy Council

WHICH DOG DO YOU THINK DRINKS
MILK?

to last for many weeks. After that time they must get iron in some way in order to be healthy.

Milk Better than Meat for Children. We often think that meat must be good food because some animals, such as lions and tigers, which live entirely on meat, are among the strongest and fiercest animals known. But wild, meat-eating animals eat the whole of the animals they devour, including blood, bones, and muscles. Such food is more nourishing than ordinary lean meat.

In some of our great city parks where there are wild animals in cages it has been found impossible to keep them alive and well when they are fed on chunks of lean meat like those that come to us from the market. It was only when they were fed on bones, fat, and animals like rabbits, which they could devour whole, that they began to thrive.

Many, many years ago, before man was civilized, he often lived on meat alone, but, like the lion, he ate all the animal. We could not do that, because our ideas of living are different; but we can drink milk, which supplies everything but iron.

Meat is not nearly as good for children as milk. If enough milk and green vegetables are eaten, little meat is necessary. One of the best ways to cook meat is to use it for flavoring a vegetable stew.

Growing Children need Some Meat. Meat is more easily digested than any other food except milk. It is also more readily used in building up and repairing the body. Some meat, therefore, is good for growing children.

Milk is a Cheap Food. Even when milk is most expensive it is a cheap food compared with some others. It has no waste part, such as we find in almost everything else which we eat. Then, too, it contains kinds of food which every child needs to have.

Those who have made a careful study of foods tell us that each quart of milk is about equal in *fuel value* to any one of the foods listed below:

- 2 pounds of chicken
- 3 pounds of fresh codfish
- 2 pounds of salt codfish
- 4 pounds of beets
- 5 pounds of turnips
- $\frac{3}{4}$ of a pound of lean beef
- 8 eggs

We should remember that although fruits and vegetables supply little heat and energy they are very valuable foods. But a laboring man would find it hard to work on a mere diet of fruit and vegetables. They have little fuel value. For supplying heat and energy milk is one of the cheapest foods.

Find out how much you are paying for milk; then look over some of your mother's market bills to find out how much the other foods cost. You may have to inquire at your market. How do they compare with the cost of milk? Do you find that milk is a cheap kind of food or an expensive kind?



THE QUART OF MILK HAS THE
SAME FUEL VALUE AS THE EGGS.
WHICH IS CHEAPER?

Drink Whole Milk. Although skim milk has some value as a food, especially in the form of cottage cheese, most of the growth material of milk—the fat-soluble *A*—is in its fat or cream.

Rats which are fed for a long time on a diet containing no milk fat have ulcers on their eyeballs,

and sometimes they become blind. In Denmark and Japan it is reported that many children who do not get enough milk fat also get ulcers. A generous diet of whole milk restores the eyes to health. This trouble with eye ulcers is not common in America, because nearly all children get some whole milk and egg yolks.

Milk Fat is Best. Fat is necessary in our food. It gives the body energy, makes our food more pleasant to the taste, and helps digestion. People require more fat



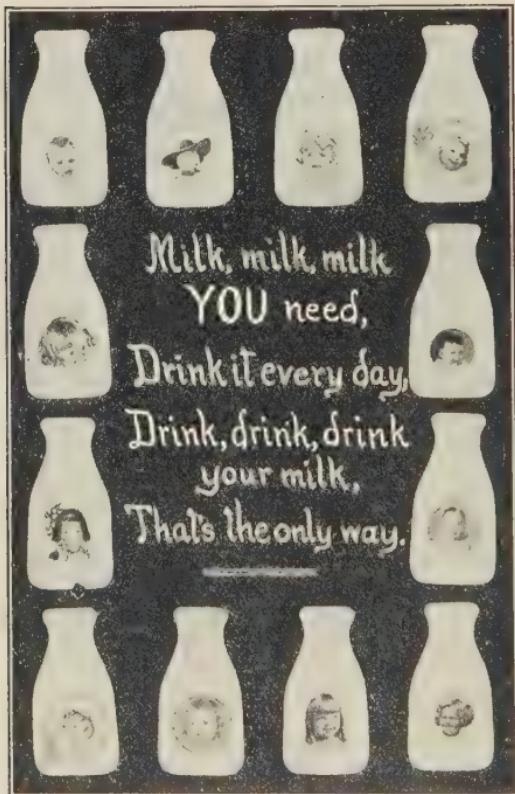
MORE FRIENDS OF CHILDHOOD

if the weather is cold or if they are doing hard muscular work. Every child should have in some form at least two tablespoonfuls of fat every day.

The fat that is found in meat, fish, nuts, and cereals is valuable, but it is not equal to milk fat. Milk fat is easy to digest and has more power to cause growth than other fats. One excellent way of getting this kind of fat is by drinking milk and using plenty of butter.

Milk and Eggs protect us from Sickness. Milk and eggs have been called protective foods because they help us

avoid sickness. If people drink plenty of pure milk from healthy cows, they are less liable than others to develop certain diseases.



Courtesy of the American Child Health Association

THIS HEALTH POSTER WAS MADE BY CHILDREN IN THE PUBLIC SCHOOLS. CAN YOU MAKE ONE JUST AS GOOD FOR DISPLAY IN YOUR SCHOOL?

Drinking Milk helps us in Play and Work. Since milk is such a good food, we should expect that it would be a good friend to boys and girls on the playground. This was found to be true in Los Angeles, California.

A study of fifty-five thousand children in one hundred and fifty

schools of that city was made by Dr. E. V. Beach. It was discovered that children who used plenty of milk were better in running, jumping, and other athletic feats.

In school also they were found to be about two grades ahead of those children who drank little or no milk.

Drink from a Pint to a Quart of Milk Daily. Of course every boy and girl wants to know how much milk he or she ought to drink to be healthy. A pint a day is the least that any school child ought to drink; a quart is better.

If you have not learned to like milk, you may enjoy using a straw. It is not necessary that you drink all the milk you take. It may be taken also in the form of custards, junkets, and soups.

Milk should not be drunk rapidly, like a glass of water. The better way is to sip your milk, especially if it is very cold.

Use Clean Milk and keep it Cool. Milk is good food for bacteria as well as for people. Certain bacteria which cause illness may get into it and increase in numbers very fast.

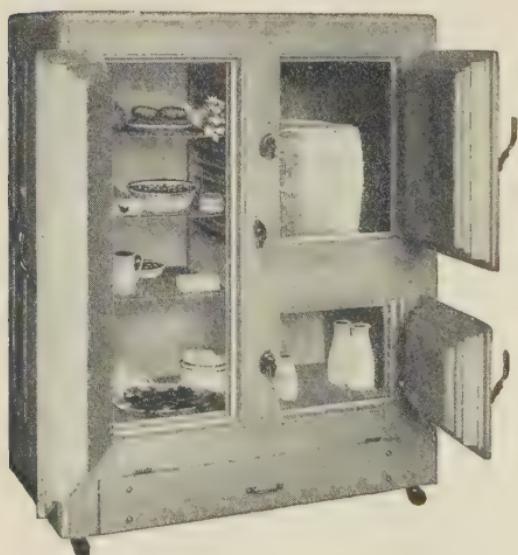


THE FUN IN DRINKING MILK
THROUGH A STRAW

One cannot be too particular about the care of milk. First of all, it should come from healthy cows and from a clean farm. Next, it should be clean. On its way to your house dust may fall on the milk cap and on the edge of the bottle. Before opening the bottle the top of

it should be washed thoroughly.

Finally your milk should be kept cool. In milk standing in a warm place bacteria increase rapidly and soon sour the milk. The morning milk should not be allowed to stand out of doors long after being delivered, but should be put in a cool place.



A GOOD HOUSEKEEPER KEEPS THE MILK
COLD IN A CLEAN REFRIGERATOR

If ice cannot be had, milk may be kept cool by wrapping the bottle in a wet cloth and putting it in a dish of water by an open window out of the way of the sun. As the rag dries, it will cool the milk.

Pasteurized milk is the safest milk. Milk may be pasteurized by heating it at home. Heat it until bubbles

appear at the edge. Active boiling is not necessary. Heat kills the harmful bacteria. Milk should be cooled after heating.

Tea and Coffee your Foes. If boys and girls wish to be happy and successful, they should not form the bad habit of drinking tea and coffee. These drinks have no nourishment except the cream and sugar we put into them. They may upset the digestion, cause nervousness, and destroy the desire for really good foods.

In some schools children have been known to come in the morning with only a light breakfast of bread and coffee. Such children are apt to be underweight. They get tired easily and are more likely to catch colds. It is hard for them to do their work in school.

Milk is one of the best friends a boy or girl can have.

How to Cook Eggs. Eggs are best soft-boiled, poached, or scrambled. They may be used also in other foods, such as custards.

For some children milk is a better food than eggs because eggs may be hard to digest and may disagree with them. But eggs are so valuable, especially the yolks, that most children should have one a day.

Children should avoid fried eggs and other fried food. Much of the fried food is spoiled in cooking, and it is hard to digest.

Remember

1. Many children who are under weight are poor in scholarship.
2. Plenty of milk and other good foods will bring some of those children up to standard weight and scholarship.
3. Milk is nearly a perfect food.
4. It stimulates growth and protects against disease.
5. Add other things worth remembering.

Health Habits

1. Drink at least a pint of milk a day.
2. Sip milk slowly.
3. Keep milk clean and cold.
4. Protect milk from flies.
5. Drink no coffee or tea.
6. What other health habits are built around the use of milk?

Things to Do

1. Make a homemade ice box for a bottle of milk.
2. Tell about your visit to a dairy.
3. Have children bring milk from home and examine the bottom of each bottle for dirt.
4. Compare the food values of milk with those of some other food.
5. Set aside a bottle of milk and notice the cream.

6. Let each pupil draw a milk bottle on pasteboard and cut it out. Let different children take turns each morning punching the pasteboard bottles. Every punch will mean one pint of milk drunk. How many punches should you have in your card this month?

7. Make some health posters on milk, showing what a quart of milk equals in fuel value. For example, draw a picture of a quart of milk on one side of a card and eight eggs on the other. Put the sign of equality (=) between them.

Review and Thought Questions

1. Why is the cow the friend of childhood?
2. When does a baby cease to thrive if fed on milk alone?
3. Why do growing children need more milk than grown people?
4. What does the story of Adam teach us?
5. How do we know that milk will help us to work and play better?
6. What are some of the reasons why tea and coffee are not good for children?
7. What is the value of fats in the diet?
8. What makes milk fat so valuable?
9. Is your milk pasteurized? Find out how it is done.
10. Is lettuce valuable because it is fuel? Why do we need it in the diet?

CHAPTER X

CEREALS AND SEEDS AS FOODS

The Staff of Life. If you were to take a long journey next summer across the United States from the Atlantic Ocean to the Pacific, you would see many interesting things. Westward, beyond the Appalachian Mountains and across the Mississippi River, you would see great fields of waving grain. Some of these fields of wheat, corn, oats, and rye are miles long. This great ocean of grain stretches out as far as the eye can see. As you looked out of the window of your swiftly moving express train you might wonder what would be done with so much grain. You would stop wondering if you knew that almost half the food eaten by civilized people is cereal. Since the very earliest times it has been known as the staff of life. You remember that when Joseph found his brothers in Egypt they had gone there for grain because there was a famine in their land. Even today there is much hardship when the grain crops fail.

During the World War the little country of Denmark kept itself in the best of health, although it used for food mostly whole-wheat flour and vegetables.

Flour from Whole Grain Best. If you stop to think of what you had for your last breakfast, dinner, and supper, you may be surprised to find how many of the things you ate were made of wheat flour. No meal is complete without it. Wheat flour is nutritious and is easily



CEREALS ARE THE STAFF OF LIFE

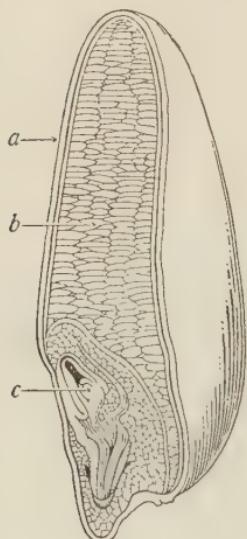
digested, but the flour made from the whole grain is best. In making the ordinary white flour we take out of it the most nutritious part.

By studying the drawing on the next page you will notice that a grain of wheat is divided into three parts:

1. The outer coat, which makes the bran.
2. The inner part, which is very white.

3. The germ, or the living part of the grain, which makes it possible for the grain to sprout and grow.

In the grinding of the wheat and the making of the flour the bran and the germ are sifted out, and the white dust left over is what we call flour. In this way two very valuable parts of the grain are removed.



GRAIN OF WHEAT

Parts of a grain of wheat:
a, the outer coat; b, the inner part; c, the germ

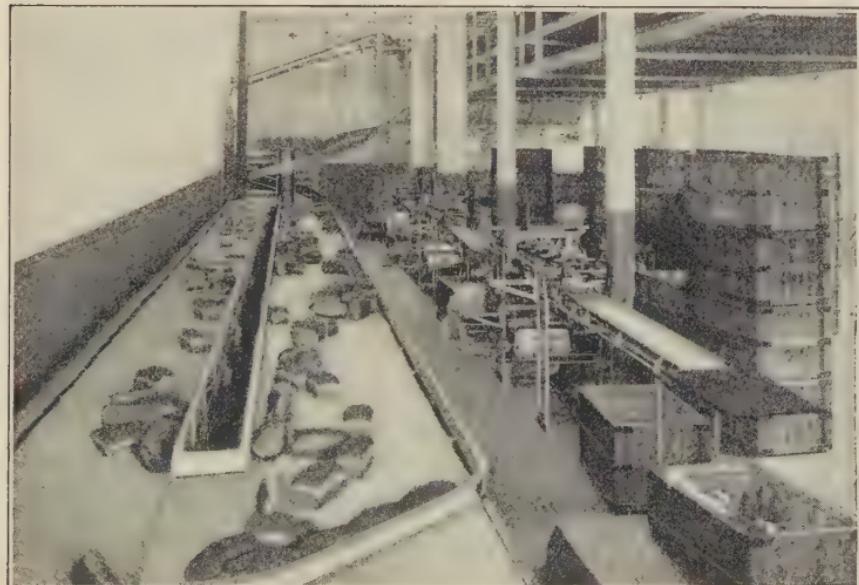
The bran is valuable not only because of its very valuable mineral nutrition but also because it contains much indigestible material. This roughage urges the large intestine to become active and so aids the body in removing its poisonous wastes.

The inner part of the grain is rich in starch. The germ is very rich in oil and protein.

It also has some of the fat-soluble *A*, which is so plentiful in milk and egg yolks.

Why White Bread is used. If a bag of white flour is left in the pantry near a bag of whole-wheat flour, the mice will generally nibble only the whole-wheat flour. Little insects also find the whole-wheat flour more attractive.

There is so much oil in the whole-wheat flour that it spoils readily. For these reasons it is hard to ship whole-wheat flour long distances and keep it in good condition.



Courtesy General Bakery Co.

BUY BREAD MADE AT A CLEAN BAKERY

In this shop the bread is made and wrapped by machinery. The loaves you see in the picture have not been touched by human hands

Another reason why people use white flour is because they like the looks of the white bread, and they have come to think bread made from whole wheat is not so good.

Other Foods needed with White Bread. White bread is nutritious, but it is not a complete food. It is lacking in fat, roughage, and growth materials which are found in

larger amounts in whole-wheat flour. White flour becomes a very important part of our diet when it is eaten with plenty of milk, butter, eggs, and leafy vegetables. Many bakers are now making bread with milk. This is very nutritious and superior to the usual kind of white bread.



THE EATING OF A COOKED CEREAL
FOR BREAKFAST IS AN EXCELLENT
HEALTH HABIT

All other grains and cereals make better food when the whole seed is used.

Cereals for Breakfast.
The habit of eating some sort of cereal for breakfast is one that should be encouraged.

Do not forget to pour a good supply of whole milk or cream over your cereal.

Use little or no sugar on your cereal. Children often put so much sugar on their cereal that they do not care for the oversweetened milk in the bottom of the dish. Whole milk is needed with the cereal to make it a well-balanced food. It is a good health habit to eat a little bran on your breakfast cereal.

Remember

1. Bread is one of our most important foods.
2. Bread is not as good as milk, meat, and eggs for growth and repair.
3. Whole-wheat bread is more nutritious than white bread.
4. What other facts do you remember?

Health Habits

1. Eat bran on your cereal. Eat whole-wheat bread.
2. Put little sugar on your cereal.
3. Wash your mouth after eating bread or cereal to prevent the decay of your teeth.
4. Name other health habits.

Things to Do

1. Cut across a grain of corn and find the bran layer, the germ, and the flour, or meal, part.
2. Find out whether your bread is made with milk.
3. Find out why we use yeast in making bread.
4. Make some health posters on bread and cereal.

Review and Thought Questions

1. Why is hard bread better than soft bread?
2. Why should we chew bread thoroughly?
3. Why do we put butter or gravy on bread?
4. Why is whole-grain bread better for us than white bread?
5. What are the three parts of a grain of wheat? What is the value of each?

CHAPTER XI

DRINK PLENTY OF WATER

Across the Desert. You have probably read in your geographies about the Sahara Desert. It is a large territory, about the size of the United States, in the northern part of Africa.

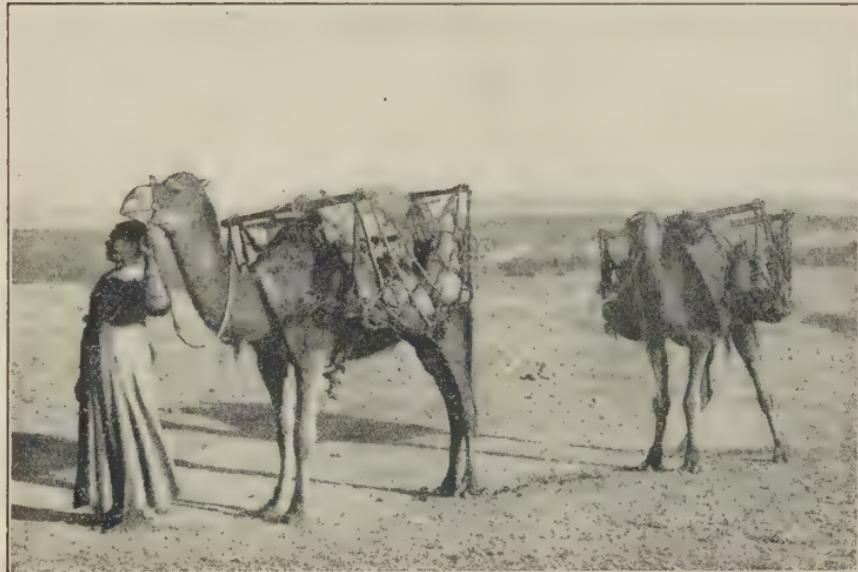
The winds that blow across this land carry very little moisture, so that rain is almost unknown there. The burning sun pours down day after day and dries up even the smallest bit of moisture that may fall at night.

It is so dry that scarcely anything can grow there, and it is therefore mostly a region of shifting sand. Also few birds and animals live there. It is a region of death rather than life.

When men wish to cross this great desert they usually ride on the backs of camels, because the camel can live longer without water than perhaps any other animal. On the backs of the camels are carried huge leather bags filled with water. If these bottles should break and the water be lost, the lives of the travelers would be in danger. Therefore the water is carefully guarded. Out in the hot, sandy desert every drop is more precious than gold.

Here and there in the desert springs break through the ground. There trees, fruits, and flowers grow rapidly. Such places are called oases.

How eagerly the men in the long train of camels scan the horizon for the oases! There they rest, and both



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THESE CAMELS CARRY A PRECIOUS LOAD OF LIFE-GIVING WATER. IT
MAY BE WORTH MORE THAN GOLD AND DIAMONDS

men and camels quench their thirst before they start again on their long journey over the burning sands.

No Life without Water. The story of the great desert teaches us a very important lesson. Plants, animals, insects, human beings,—everything that lives,—must have water.

When desert places are watered by wells or by big ditches dug through the sand, there is a miracle. Cities spring up, and the land teems with life. Water is like the

magician's wand. It mysteriously changes the world!



"I DRINK AT LEAST FOUR GLASSES OF WATER EVERY DAY"

the hard tissues, such as the bones and the teeth. Since there is so much water in all our foods, and it is so necessary in our diet, it deserves to be called a food.

Why the Body needs Water. A large proportion, about seven tenths of the entire body, is water.

Water is a Food. It cannot be said that water is a food in the same way that potatoes, milk, and carrots are foods. Water does not produce heat and energy directly, but it dissolves all the other foods so that they can be digested. It is also a necessary part of every portion of the human body, even to

Water composes a large part of the blood and the secretions of the different glands, such as the saliva and the gastric juice. Without it there could be no digestion.



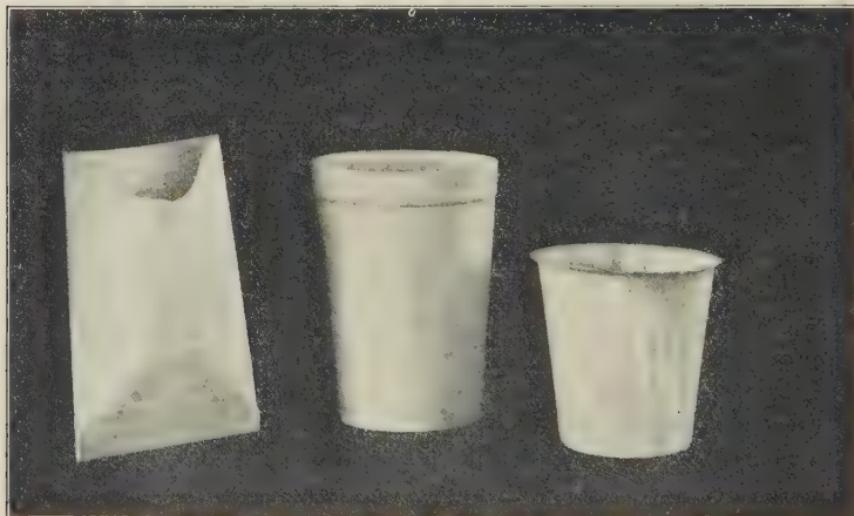
IT'S A GOOD PLAN TO THINK TWICE BEFORE DRINKING WATER FROM
A SPRING OR BROOK. THIS WATER IS NOT SAFE

By moistening different parts of the body, such as the lips and joints, it also prevents friction and pain.

It makes perspiring possible. Without perspiring we should find it almost impossible to keep the body cool in hot weather or during hard exercise, such as running or jumping. The need for perspiration explains why we drink more water in summer than in winter.

One of the most important uses of water is that of washing the inside of the body. In this way many of the wastes and poisons are removed. This is accomplished largely through the kidneys.

Drink about Four Glasses of Water Every Day. The body loses pints of water each day. A large part of it passes



CLEAN, SAFE, CHEAP

off in perspiration alone. The remainder is lost through the breath we breathe out and through the secretions of the kidneys.

If our bodies cannot take in this amount of water through food and drink, our health suffers. The organs of digestion cannot do their work, the body cannot be kept cool, and the wastes will not be disposed of.

Many of our foods, such as milk, vegetables, vegetable stews, and fruit, contain a great deal of water. The more water we get in our food, the less we need to drink. We need more water in summer than in winter because we lose so much in perspiration.

Everybody should drink plenty of water. Most of us need to drink at least four glasses each day.

It is a very good habit to drink a glass of water on rising in the morning. Water may be taken at mealtime if it is not used to wash down the food. Drinking-water is more pleasant when it is cool, but ice-cold water is not healthful.

Drink Pure Water. In our large cities departments of health look after the water supply so well that it is kept pure and clean. Sometimes in small towns and in the country the water comes from surface wells. These wells are so shallow that often drainage soaks into them.



A REFRESHING DRINK.
IT'S SAFE

The safest wells of water are those which are driven deep. Even deep wells may be unsafe unless they are on high ground and well protected from surface drainage.

Sometimes when boys and girls take tramps through



IT IS A DANGEROUS HABIT TO DRINK
FROM SOMEBODY ELSE'S CUP

carry water with you, for you may not get good water on your walk. Boy and girl scouts carry canteens.

Drink from your Own Cup. Even if water that comes from the well or the faucet is pure, it may have become unfit to drink before it finally gets into a person's mouth.

the woods and feel very thirsty they quench their thirst at a cool spring or brook. This may be very dangerous because surface water is apt to receive the drainage from houses and barnyards many miles away. Water that is cool and clear is not sure to be good to drink. The better way to do in going on a tramp is to

It may be filthy because the cup was not washed clean, because flies walked over the cup, tracking filth upon it, or because somebody drank out of it before you did. It is never safe to drink from a cup which has just been used by somebody else. Many times there will be no serious consequences. We know, however, that the mouth, with its warmth, moisture, and particles of food, is an ideal place for bacteria to thrive. Many of these bacteria are harmless, but some of them are likely to be disease germs. Bad colds, pneumonia, diphtheria, and other illnesses may be caught in this way.

The really safe thing to do, even in your own home, is to have a drinking-cup of your own. If you go on a long journey, do not forget to carry your own drinking-cup with you.

Remember

1. We need to drink several pints of water every day.
2. Everything that lives needs water.
3. Unclean water is dangerous; it may carry disease.
4. Water is not safe because it looks clear and tastes cool and pleasant. It should be free from sewage.
5. Shallow wells and springs may be dangerous.
6. Cool water is more wholesome than cold water. It also satisfies thirst better.
7. What other facts about water do you remember?

Health Habits

1. Drink one glass of water when you first get up. Thus you wash your stomach when you wash your face.
2. Drink one or two glasses of water between breakfast and luncheon and the same number between luncheon and supper.
3. Drink water at meals, but do not drink water instead of chewing your food.
4. Avoid drinking from a common cup or using a common towel.
5. Drink cool water but not ice water.

Things to Do

1. Cut out and make a paper drinking-cup.
2. Wrap a water bottle so as to keep it cool in hot weather.
3. Make a desert on your sand table. Put in oases.
4. Bring a picture to school showing an animal or bird drinking.

Review and Thought Questions

1. How many reasons can you give why water is so important in the world?
2. Why do we need to drink water?
3. Explain how water may look inviting and still be dangerous.
4. What is a thermos bottle? How is it built? How does it work?
5. Why is a deep well likely to furnish better drinking-water than a spring or a shallow well?

CHAPTER XII

GOOD MEALS FOR CHILDREN

How Some Prisoners became Free. This is the story of some men who wore striped clothes. They were prisoners in the state of Mississippi, and they were offered their freedom if they would eat exactly what they were told to eat for a number of months.

It came about in this way. In the year 1908 a curious kind of illness called pellagra was found in the United States. A few years later, in 1917, there were one hundred and seventy thousand people suffering from this disease.

There were many different ideas as to what caused the disease; but nobody really knew. It was found that this illness always occurred at the end of the winter months. People who had it were found to live mostly on white bread, molasses, and fat pork. They did not eat much lean meat, milk, butter, or vegetables.

Dr. J. Goldberger believed that this illness was caused by improper food. He was glad to have the chance to try an experiment on a dozen prisoners of the Mississippi prison.

Eleven men finally took this test. It began in April and lasted until October. The prisoners lived largely on white flour, polished rice, starch, sugar, molasses, and pork fat. During the test all the men lost weight, and

at the end of five and a half months six of them showed signs of pellagra. Nobody else in the prison had the disease. The sick men were given a proper diet and were cured.

The doors of the prison opened wide, and the eleven prisoners were free. They had helped to prove to the world that the kind of food you eat is

important, for it may make you healthy or make you sick.

We now know that pellagra is unnecessary. It can be prevented and cured by a balanced diet. Too much starchy food, such as corn, oatmeal, and molasses, should be avoided. The diet should be rich in lean meat, fresh milk, eggs, or beans and peas.



THESE ARE ALL GOOD FOODS

The Need of Balanced Meals. The prisoners became ill because they did not have the different kinds of food needed to be healthy. It is not sufficient to have a large quantity of food to eat: the food must be of the right kind. When we have enough of each of the necessary kinds of food we have what is called a balanced ration.

Some people think that they can live almost entirely on meat or vegetables or pastry. This, of course, is a very great mistake.

A school child needs every day:

1. *Milk*, from a pint to a quart a day.
2. *Fruit*, at least once every day.
3. *Green vegetables*.
4. *Meat and butter*. Meat should be served not more than once a day. Lean beef, mutton, lamb, chicken, and fish are good for children.
5. *A well-cooked cereal and bread every day*.

A Good Breakfast. Every breakfast should contain milk, bread, butter, and, if possible, either cereal, fruit, or egg.

Here is a sample of a good breakfast for a child from seven to twelve years of age:

Oatmeal, half a cup with milk
Toast and butter, two to three slices
Apple sauce, two to four tablespoonfuls
Milk to drink, one glass

A Good Dinner. Dinner, or the heaviest meal, usually should come in the middle of the day.

For a light meal at noon a thick meat and vegetable soup, bread and butter, and some fruit would be plenty.

A complete dinner should consist of

1. Soup.
2. Meat and bread.
3. Vegetables.

4. Dessert. Dessert is not really necessary if the meal is heavy. Excellent desserts for children are fruit puddings, plain cookies, cake, ice cream, and fresh fruit.

This is a sample of an excellent dinner for children:

1. Lamb stew with vegetables, small portion.
2. New beets and beet-topgreens, two to three tablespoonfuls.
3. Bread and butter, two to three slices.
4. Custard, one cup.

A Good Supper. If the heavy meal of the day is eaten at noon, the supper should be a light meal. Dishes made of milk, eggs, vegetables, and cereals, with fruit or some other light dessert, make a good supper.

This kind of supper makes boys and girls healthy:

1. Potato soup with milk, one cup.
2. Poached egg on toast.
3. Brown bread and butter, two to three slices.
4. Stewed prunes, four to five.
5. Milk to drink, one glass.

Luncheon at School. If children are to do their best work in school, they should have something nourishing for their midday meal. If they must have this meal at school, then a thick vegetable soup is very desirable.

A good basket luncheon may be made of sandwiches, fruit, and a bottle of milk.

Foods not Good for Children. Here are some foods that children who wish to be strong and healthy will avoid:

1. *Tea, coffee, pop, root beer, soda water.* The first two are stimulants. The others are flavored and sweetened. Milk and unflavored water are better.

2. *Fried foods.* They are hard to digest.

3. *Hot bread, rich puddings, and pastry.* They destroy the taste for wholesome foods.

4. *Salted fish or meat, except bacon and salt pork.* All heavily salted meat should be avoided.



HOW DO YOU LIKE THE LOOKS OF THESE FACES? WOULD YOU CHOOSE THEM FOR YOUR FRIENDS?

5. *Pickles of all kinds, catsup, and mustard.*
6. *All highly seasoned foods, and condiments, such as salt and pepper.*

Remember

1. Good food makes us healthy.
2. To be wholesome, a diet must be properly balanced.
3. Three meals a day is the right number.
4. It is more healthful not to eat between meals.
5. Noon is the best time for the heavy meal.
6. What other points do you remember about meals for children?

Health Habits

1. Eat three meals a day at regular times.
2. Do not eat between meals.
3. Select a list of unwholesome foods that you will agree to avoid.
4. Do not eat candies or other sweets to excess. They often upset the desire for wholesome meals at regular hours.
5. Name other habits that you think children should form.

Things to Do

1. Write down a restaurant order for (1) a wholesome breakfast; (2) a wholesome dinner; (3) a wholesome supper.
2. Write a list of foods for a wholesome luncheon to be (1) carried to school; (2) prepared at school.

3. Let each member of the class bring to school one unwholesome food and talk to the class about it.

Review and Thought Questions

1. How did Dr. Goldberger's experiment prove that improper food causes illness?
2. What is a balanced meal?
3. What are the different kinds of food that children need every day to be healthy?
4. What harm is done by eating too little? by eating too much?
5. Why do children need more food for their weight than grown people?
6. Why do you think children ought not to eat highly seasoned foods?

CHAPTER XIII

BREATHING FRESH AIR

Climbing Mt. Everest. If you will look at a map of Asia you will find a little dot marked Mt. Everest. It is the highest mountain in the world. It is over five miles high. There it stands, towering above the clouds. Its peak is one of the very few that man has not climbed.

One of the difficulties in climbing this mountain is that the higher up one goes, the thinner the air becomes. It finally gets so thin that the climber has to stop every few minutes and gasp for air before he can go any farther. Those who climb high mountains find it necessary to carry on their backs compressed air, or oxygen, which they breathe when they get very high up. Oxygen, as you may know, is something in the air that we need in order to live.

The story of those who have tried to reach the summit of Mt. Everest proves that the air we work and live in must be of the right kind. The air on Mt. Everest is poor in oxygen because it is too thin. It is also too cold. Mountain climbing shows also that it is as necessary to have air as it is to have food and drink. If you

try to hold your breath just as long as you can, you will realize that you can go for a longer time without food and water than you can without air.

Why we need to Breathe. If you watch your own breathing, you will notice that you breathe the air in and then breathe it out. What takes place is very much like what happens in an engine. In looking at an engine you will notice that there is a draft that lets air into the fire box, where the coal burns. There is also the smokestack, where hot air, smoke, and cinders are thrown off. The engine breathes. When the engineer wishes his engine to move faster he opens the draft wider and puts on more coal. The engine could not burn the coal without air. It is the oxygen in the air that makes the coal burn. It is also the oxygen in the air that allows us to make use of our food by turning it into warmth and energy.



AVIATORS MUST HAVE PLENTY OF OXYGEN IN HIGH ALTITUDES

When we breathe the air out it contains wastes. It contains water also. On a cold day in winter this moisture condenses, and we are able to see it. This air is warm, as you will find by breathing on your hand. The body loses much heat in this way. When a dog is warm he cools himself largely by panting.

Boys and girls need to breathe in order to work and to grow and to get rid of wastes—things that the body cannot use. If we did not breathe in fresh air we should not be able to make use of our food any more than an engine could make use of its coal without open drafts.

Breathe through your Nose. The nose was beautifully planned by nature for breathing. First of all, the air must travel some distance before it reaches the throat and lungs. This gives it a chance to get *warmed*. The nostrils, through which the air is drawn, are well supplied with blood vessels that come near the surface and act somewhat like radiators.

Secondly, the nose *moistens* the air. The inside of the nose is so moist that dry air begins to get moist as soon as we begin to breathe it.

Thirdly, breathing through the nose helps to *clean* the air. The dust sticks to little hairs in the nose and also to the moist parts inside the nose.

By breathing through the mouth we are likely to breathe air that is dry, cold, and dirty. Such air will dry out the mouth and throat and make one feel uncomfortable. Breathing through the mouth also causes snoring, and many dentists believe that it is one of the causes of crooked teeth and badly shaped mouths.

Blow the Nose Properly. One reason why children breathe through the mouth is that the nose often becomes stopped up with mucus from the head.

Every child should carry a clean handkerchief to school every day and should learn to blow the nose properly. There is a tube that leads from the throat into the inner ear. Frequently the mistake is made of blowing the nose very hard with the nostrils pretty well closed. This often forces the mucus into the inner ear and causes earache and deafness.

A Drill in Blowing the Nose. In many schools there are health drills in which the children are trained to blow their noses in the right way. Let everybody in the class who has a clean handkerchief try to carry out these directions that are practiced by the children of New York state:

1. Stand by your seat with a handkerchief in your right hand.

2. Hold your loose, unfolded handkerchief in the hollow of your right hand, so that the tips of the fingers and thumb are covered.
3. Cover the nose with the handkerchief and press the right thumb on the right nostril, closing it. Leave the left nostril wide open.
4. Blow hard—one, two, three times or more. This drives the mucus from the left nostril into the folds of the handkerchief.
5. Now shift your hand to the right so as to close the left nostril with the finger next to your thumb. Your right nostril should then be open.
6. Blow the nose as before so as to drive out the mucus from the right nostril.
7. Without drawing the handkerchief from the nose wipe the nostrils three times with a fold of the handkerchief between the thumb and the index finger.
8. Put the handkerchief in the pocket.
9. Be seated.

The Cause of Mouth-Breathing. Mouth-breathing may be nothing more than a bad habit, but usually it is caused by some growth in the nose or upper part of the throat. The most common kind of growth which causes breathing through the mouth is adenoids. If you will study the cut on the next page, you will see just how such a

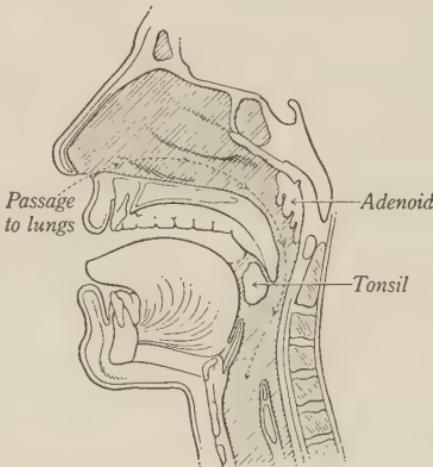
growth would make it difficult for one to breathe through the nose. Every person who finds it hard to breathe through his nose should go to his physician for advice, for one of many troubles may be causing the difficulty.

Breathing through the mouth is a very bad habit also, because it often makes the face ugly. Fine-looking boys and girls breathe through their noses.

Breathing and the Lungs. When we take a good breath, the air passes through the nose and down into the throat through the openings at the back of the mouth. It then travels down the windpipe to the

lungs. The lungs work like a bellows. When we lift the ribs and push out the abdomen the air is sucked in, and when we squeeze down the ribs and pull in the abdomen the air is forced out.

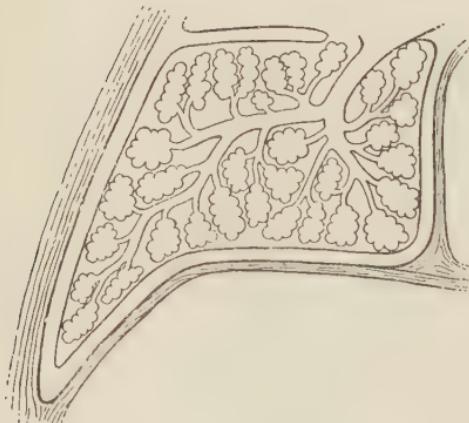
If you will look at the drawing on the next page, you will see that a lung is very much like a tree. The large air tube divides into smaller tubes, and they again divide



ADENOIDS MAKE BREATHING THROUGH
THE NOSE DIFFICULT

into still smaller ones. Finally the smallest tubes end in little chambers, or air sacs, that look like bubbles. A clump of these bubbles at the end of a tube looks like a leaf.

In the thin walls of these air sacs are little tubes of blood. This blood unloads wastes and poisons into the air of the sacs and loads up with oxygen from the sacs.



LOWER PART OF ONE OF THE LUNGS.
NOTICE THE AIR SACS

When that is done the air is forced out. This is breathing out.

Children breathe on the average eighteen times a minute, grown persons about sixteen times.

Watch the Thermometer. From the time the fires are kindled in the fall until they go

out in the spring we are likely to have overheated houses and schoolrooms. A hot schoolroom means a sleepy school, for children cannot keep wide awake unless the air is fairly cool. Hot air makes one feel uncomfortable and even ill.

The only way to be certain of keeping the air in a room cool is to have a thermometer in the room and to

learn to read it. The thermometer should be in a convenient place in the room and on a level with the eyes. The right temperature is about 68 degrees Fahrenheit.



IT IS JUST 68 DEGREES FAHRENHEIT

Somebody should look at the thermometer every thirty minutes. What is the temperature in your schoolroom now?

How to Ventilate. One way to be comfortable in a room either in summer or in winter is to have the air moving all the time. If the air is still, our bodies are soon surrounded with moist, warm air. Our bodies heat

the air and throw off perspiration, and the air becomes so moist and warm that the body cannot be cooled.

One of the best ways to keep the air moving is to open the windows. Many persons do not know how to open a window properly. Often they open the lower half of a window wide so that the wind blows directly on somebody, who feels so uncomfortable that he soon puts the window down. Then there is no chance to have moving air. If the windows are opened a little at the bottom and a little at the top, the air may be changed without causing disagreeable drafts.

Danger from Air which is too Dry. In the winter our schoolrooms and houses are usually so overheated that the air has little moisture. Men who have made a careful study of the air tell us that the air in our houses and schoolrooms is often as dry as that found in the great African desert of Sahara. All except the most hardy plants shrivel and dry in such an atmosphere. It is not surprising, then, that people in such a room should feel very uncomfortable. The hot air dries the nose and throat and makes it much easier to take cold. Both children and older people find it hard to study and work in hot, dry air.

The air may be moistened somewhat by placing water in pans, where it will evaporate. Most furnaces have

water pots that help to moisten the air. While out-of-door air is generally moist, when it is heated it becomes too dry, and we need to add water to it. Since the out-of-door air is nearly always moist enough to be healthful, one of the best things to do is to have the windows open as much as possible and to live as much as we can in the open air.

Breathe All the Out-of-door Air you can. The out-of-door air is the most perfect air we have. Some days, of course, it may be too moist, or "muggy," and too hot for comfort; but in winter it is usually cool, moving, and fairly moist. It is also much cleaner and purer than is the air in rooms where many people are breathing, sneezing, and coughing.

This means that boys and girls who wish to be healthy and have rosy cheeks will try to get all the fresh air they can. Every child should try to play out of doors at least one or two hours every day.

One of the best times to get fresh out-of-door air is at night. Put on enough bedclothes to keep you warm and then open your windows at the bottom and top. In this way you can breathe the best air for many hours. Sleeping on a piazza during the summer is also healthful.

Breathing fresh air gives us a better appetite and helps us to gain in weight.

Remember

1. We need to be just as careful about the air we breathe as about the food we eat or the water we drink.
2. The best kind of air to play and work in is fairly cool, moist, and moving.
3. The nose helps to clean, warm, and moisten the air.
4. Adenoids cause mouth-breathing.
5. The best kind of air is out-of-door air.

Health Habits

1. Breathe through your nose.
2. Expand your chest and back muscles by two minutes of deep breathing as a part of your morning exercise. This is best taken in the bathroom, with the window open.
3. Carry a clean handkerchief. Use it properly.
4. If you must cough or sneeze, hold a handkerchief in front of your mouth and nose.
5. Avoid persons who have colds.
6. Live in cool rooms.
7. Live in properly moistened air.
8. Live in moving air.
9. Stay in the open air as much as possible.
10. Be a "fresh-air fiend."
11. Name other health habits.

Things to Do

1. Show your clean handkerchiefs.
2. Go through a blowing-the-nose drill.

3. Keep an hourly record of the temperature of the school-room.
4. Show how to open a window to ventilate.
5. Look for dust dancing in the air, as shown by a ray of sunlight.
6. Put a thermometer on the floor and see what the temperature is there. Compare it with the temperature taken at the usual place and also four feet above the radiator.
7. Count the number of your respirations per minute when sitting still, also after going up and down stairs.
8. Put a candle in a glass jar and cover it tightly. What happens? Why?

Review and Thought Questions

1. Why do you feel the cold less right after recess?
2. Why do football players go without overcoats?
3. Why does furniture get loose in the joints in winter?
4. Why does dry-sweeping do harm in schools?
5. Why do we turn air upward in ventilating?
6. Why do we use handkerchiefs?
7. Why must we hold a handkerchief before the mouth and nose when we sneeze?
8. Why do we keep away from persons who have colds?
9. Why do we need oxygen?
10. Why do we breathe out?
11. What are adenoids? How do they affect health?
12. What is the best kind of air to breathe? Why?

CHAPTER XIV

OUR FRIEND THE SUN

The Power of the King. In days of old, children often had a disease which was called "the king's evil." One reason why it was called by that name was that people believed a touch of the king's hand would cure it.

Whenever it was known that the king was to pass along certain roads, persons who had "the king's evil" got to these roads as well as they could, and hung around there waiting for the king to come along. When he approached they threw themselves before him begging him to touch them and save their lives.

We now know that this disease is scrofula, or tuberculosis of the glands. In a sense it is "the king's evil," but the king is the sun. Those who do not get enough sunlight are liable to have this disease. The touch of King Sun cures it. He is one of the world's best friends.

Sunshine makes Plants Healthy. The sun is one of the very best friends we have. You know what happens in the spring when the sun gets higher and higher in the heavens and shines longer and longer every day. The

snow and ice disappear, and the grass begins to grow, and the new leaves to turn green.

Without the sun it is hard for any plants to grow except those like molds and toadstools. If you have ever found a potato in a damp place in your cellar, you may



WISE PEOPLE HAVE THIS GENTLEMAN FOR THEIR FAMILY DOCTOR

have noticed that it had sprouts which had grown many inches in length. Perhaps even some leaves had begun to appear. If so, they were very pale and unhealthy looking, very different from the green potato plants which grow out of doors in the sunlight. Have you ever noticed that plants growing in a dark room seem to know they need light? They always grow toward the sunlight.

Sunshine is a Friend of Animals. Sunlight is the friend not only of plants but also of animals.

Dr. J. S. Hughes of the Kansas Agricultural Experiment Station proved this in an experiment with day-old



PLANTS GROW IN THIS ROOM. WHY?

chicks. Different lots of the chicks were placed in pens having different degrees of light. Some were exposed to the direct rays of the sun, and others were confined in a pen so dark that it was difficult to see on first entering it. They were all given the same kind of food, the very best

for chicks. Those that lived in the darkness developed rickets; their toenails began to curl up, and their plumage looked rough. The chicks raised in the sunlight grew up to be fine, healthy fowls. Notice the difference in the picture.



Courtesy of Kansas State Agricultural College

WHICH FOWL WAS RAISED IN THE SUNSHINE?

Sunshine makes Children Healthy. Sunshine is the friend of children also. There is an old saying, "Where the sun does not go, there the doctor goes." We now know that this is true. Rosy-cheeked children are those who spend a good deal of time in the sunlight. Those who live in dark houses and spend little time in playing in the fresh air and sunshine are likely to be pale

and unhealthy like the potatoes that grow in a cellar. Sunlight seems as necessary as air or food. If children do not live a part of their time in the sunshine, their food will not do them as much good as it should. Sunshine, good air, and good food are all necessary for health.

Sun baths are excellent for sick children. In some hospitals there are rooms with almost nothing but windows where sick persons may sit and enjoy the sun. It has been found that children who are very ill because of weak lungs or rickets may be cured by letting the sunshine in upon them. Children who live in those parts of the world where sunshine is plentiful seldom have rickets.

Let us be thankful that we have such a good friend as the sun.

An Overdose of Sunshine. Unless we are careful we may get an overdose of sunshine, and that is dangerous. This is most liable to happen in the summer during a vacation, when the sun is brightest and children spend most time out of doors. Sometimes an overdose of sunshine will make the eyes burn and cause a severe headache or even a very severe illness, like sunstroke. Often it may burn the skin so severely that it feels very uncomfortable.

One way the skin protects us is by becoming brown. We often say that the sun tans us. Tan is a kind of dye

found under the skin. It turns brown in strong sunlight. When the skin gets brown the sun will do it no harm.

Until we get used to the strong sunlight in summer it is a good plan to stay in it only a short time every day;



SUNSHINE HELPS CHILDREN GROW

but each day we may stay a little longer than the day before, until finally the sun will do us no harm.

Play in the Sunshine. Every boy and girl should play out of doors every day, not only because the air is always better than it is in the house but also because of the sunshine.

The best kind of sunshine for health is the kind we get when the sun rides high in the heavens. When you can look the sun straight in the face, as you can when it is just rising or setting, it has little power for health. It is the bright sun above our heads that brings the color of health to the cheeks of boys and girls and kills the bacteria which cause colds.

Let the Sunshine Indoors. When we have good friends we usually like to invite them into our homes. The sun is one of the most cheerful and delightful friends we can have. We do not need to open the door to have him come in. All we need to do is to raise our window shades. In summer we may find it hard to let him in because of shade trees around our houses, but in winter it will be easier. Try to flood your sleeping-room and your whole house with sunshine for a short time every day when the sun shines. The sunshine that does not pass through glass is best.

If you are a wide-awake boy or girl you will show that you are a friend of the sun by welcoming him at home and in play.

Remember

1. Sunlight is good for us. It makes our cheeks rosy, and it protects us against rickets and scrofula.

2. Too much sunlight, however, is bad for us.

3. Sun baths are good for some forms of sickness.
4. Neither people, animals, nor plants can be healthy if they live a long time in a sunless place.
5. Do you remember anything else about the wholesome effects of sunlight?

Health Habits

1. Sun your rooms for a while every day.
2. Live in a room into which the sun can shine for a while every day.
3. Avoid such an excess of sun as makes you nervous, hurts your eyes, or threatens sunstroke.
4. What other habits with relation to light are wholesome?

Things to Do

1. Examine some plants that have grown in a dark place.
2. Plant some beans in two boxes. Put one of the boxes in a sunny window, and the other in a shady window. Notice in which box the first plant appears. Write every day in a book the story of how the bean plants grow.
3. Put the thermometer where the sun's rays hit it. Note the effect.
4. Find out the number of hours the sun shines into your schoolroom.
5. Notice how much of the pavement in the court of your school gets sunlight for some part of the day.

6. Keep a record of sunshiny days for one month in winter.
7. Make some health posters on sunshine.

Review and Thought Questions

1. What was it that cured of "the king's evil" persons who waited by the roadside?
2. How does sunlight purify a room?
3. Why do persons who spend many hours indoors often look pale and sickly?
4. Why do you think sunlight is a friend to plants and animals?
5. Do you know of other reasons for calling the sun our friend?

CHAPTER XV

THE CIRCULATION OF THE BLOOD

An Interesting Thing to Do. Press the fingers of your right hand against the wrist of your left hand, as shown in the picture on the next page, and keep moving them around. You will finally feel something beating. This beating is called the pulse. It is caused by the rapid flow of blood through a pipe called an artery. The blood is driven through the artery by the action of a pump called the heart. Every time the heart beats it causes a spurt of blood in the artery. This spurt is called the pulse beat. You surely have pumped water and have noticed that the water spurted at the spout every time you pumped. The faster you pump the quicker are the spurts.

Look at the second hand of a watch and notice how many pulse beats you can count in a minute when you are lying down. How fast does the pulse beat when you are sitting? when you are standing? Count the beats after running fast or going upstairs. If you study your pulse beats in this way, you will learn that when you are doing nothing your pulse beats slowly. When you are active the pulse is more rapid.

The Heart is a Pump. The force that makes the blood flow is the heart. This is an organ about as large as your fist. If you press your hand down hard on your left side between your ribs, about three inches from your breast-

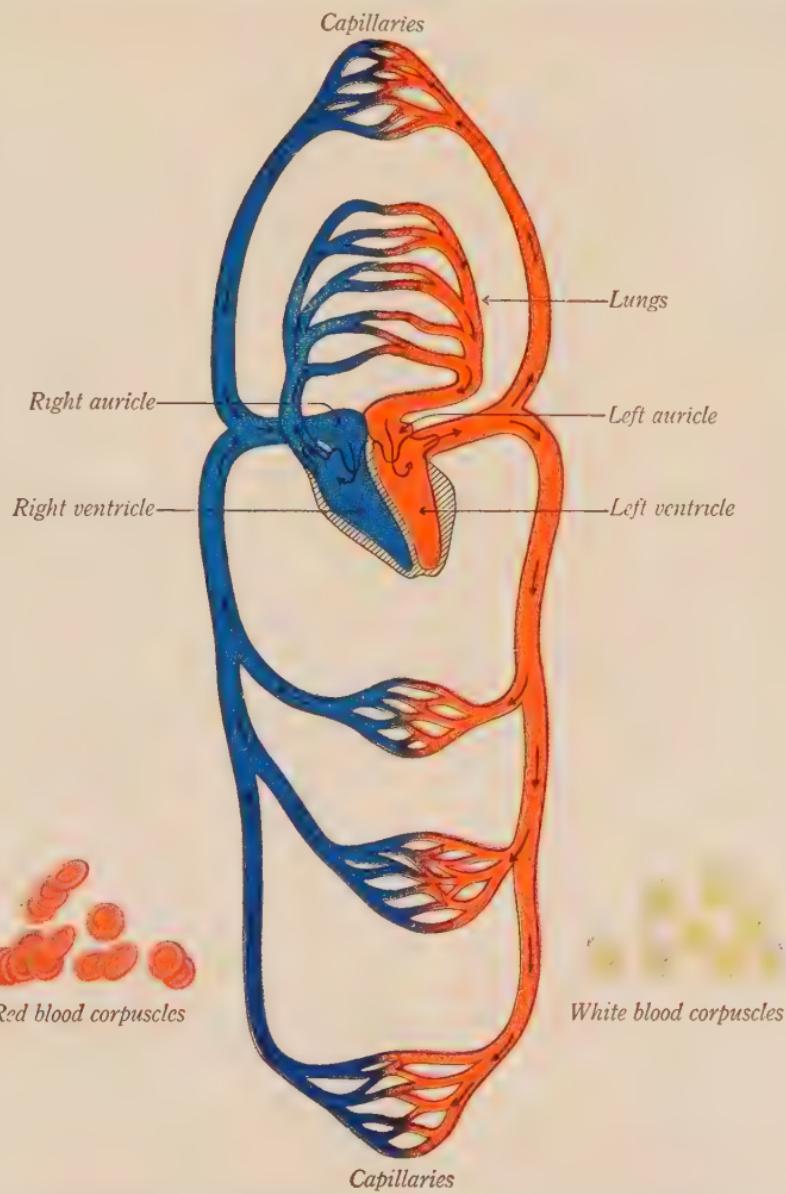
bone, you will feel your heart beating. The heart is something like a hollow bag, or balloon. When it is filled with blood, it contracts and forces the blood out. Unless you are fat you can see it beating there the next time you undress.



FINDING THE PULSE

The heart has four chambers. The two upper ones are called auricles, and the two lower ones ventricles. As the auricles contract they squeeze the blood out into the ventricles. From the ventricles the blood flows into pipes called arteries. The arteries always carry blood away from the heart.

There is no opening between the right and left sides of the heart.



GENERAL PLAN OF THE CIRCULATION

Study this plan as you read this chapter

The Journey of a Drop of Blood. To understand better how the blood circulates let us follow a drop as it travels around the body. Study the drawing on the opposite page.

Let us begin with the left auricle. The blood here is a bright red. The blood is forced from the auricle into the left ventricle. The left ventricle then squeezes it into the arteries, which carry the red blood to the face and everywhere else in the body. As the blood flows along it goes in spurts, in very much the same way as water comes from an ordinary hand pump.

The arteries end in a large number of very fine tubes called *capillaries*. The capillaries finally come together in tubes called veins. Here a change takes place in the color of the blood. It loses its bright-red color and becomes bluish. In flowing through the capillaries the blood gives up its food and oxygen and becomes loaded with poison and wastes. The arteries are usually far below the surface of the skin so that they cannot readily be seen, but the veins are very near the surface. In the arteries the blood flows in jerks, but in the veins it flows evenly.

The blood in the veins finally reaches larger veins that carry it back to the heart. It is emptied into the right auricle, which squeezes it into the right ventricle. It is now pumped through an artery to the lungs. Here the

blood unloads its wastes into the air which we breathe out, and takes up oxygen. It turns from a blue to a bright red. After flowing through a vein it reaches the left auricle.

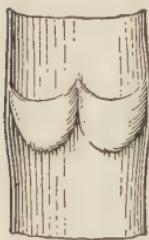
The blood flows so fast that a drop of it makes the round trip of the body three times in a minute.

Why the Blood always flows in One Direction. You may wonder why the blood does not change its direction and

flow the other way. The reason is that both the heart and the veins have valves which make it impossible for the blood stream to set backward. These valves are of different shapes. Those in the veins are little pockets that flatten out when the blood is flowing toward the heart, but fill up and stop the blood from flowing back.

The Blood. The blood looks light red or blue; but if we could see it under the microscope, we should know that the liquid part, called the plasma, is straw-colored. In this fluid there float little bodies known as corpuscles. There are two kinds of corpuscles—the red and the white.

The red corpuscles give the blood its red color. They carry oxygen from the lungs to the different parts of the body. Without this oxygen we could not move or think or even live. When the red corpuscles return to the



POCKET VALVES
IN THE VEINS

lungs, they carry wastes and poisons which the body needs to throw off to keep us healthy.

It is easy to understand that if we do not have enough red corpuscles we cannot have the best kind of health. It would be impossible for us to get as much oxygen as the body needs or to get rid of many of the wastes.

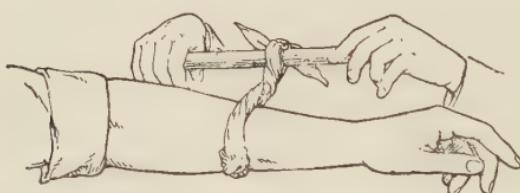
Summer vacations spent largely in the open air help to increase the number of red corpuscles. The abundance of red corpuscles in the blood showing through the skin is what makes it look rosy or pink. This pinkness is found only among people who have fair skins.

The white corpuscles are few in number, but they are very important. They are the fighters that protect the body against its enemies. When you run a splinter into your finger, and dirt and bacteria get into the wound, these fighters make haste to meet their foes. They eat up the bacteria. If we did not have their aid, it would be hard for our cuts and sores to heal.

How the Body protects itself against Bleeding. The body is an interesting machine. It protects itself against many dangers. One of these is bleeding. If you accidentally cut yourself slightly, you will notice that the wound will soon stop bleeding. The blood will stop flowing even if you do not try to stop it. Just as soon as the air strikes the blood it begins to thicken and harden very

much as water thickens and hardens when the weather is very cold. Finally this thickened blood becomes so solid that the bleeding stops.

The bleeding from ordinary wounds is usually slow because it is a vein that has been injured. The clotting of the blood will soon stop such bleeding. When the blood flows in spurts, there is more danger. It means that



ONE WAY TO STOP THE FLOW OF BLOOD

an artery has been injured. As the arteries carry the blood from the heart, pressure of some sort just above the wound

will help to stop the bleeding. If a vein has been cut, the pressure should be applied below the wound.

Keeping the Heart Healthy. Since the heart is a muscle, it needs exercise if it is to be strong enough to do its work. If you were to tie your arm down to your side so that you could not use it for several weeks, the muscles of your arm would grow pale and flabby and weak. The blacksmith's arm is strong and healthy because he uses it.

To walk and run and play hard for a little while every day is to keep your heart in such good shape that when you really need to exercise vigorously you will be able to do so without greatly straining the heart.

Remember

1. The heart has two sides, or, there are two hearts joined together.
2. Each side has two cavities, an auricle and a ventricle.
3. The arteries lead from the heart.
4. The veins lead to the heart.
5. The capillaries connect the arteries with the veins. They are tiny tubes.
6. The right heart receives blood from the muscles and organs and pumps it into the lungs.
7. The white corpuscles protect the body.
8. The blood plasma carries the corpuscles. It clots.
9. Add to this list of things you ought to remember.

Health Habits

1. Take exercise every day in order to keep your heart muscle strong and your wind good.
2. Keep your teeth and tonsils clean; avoid rheumatism and other infections in order to protect your heart.
3. Avoid tobacco and other drugs which may affect your heart.
4. Avoid all the things which may make you short-winded in athletics.
5. Do you think of other health habits which relate to the blood and circulation?

Things to Do

1. Count each other's pulse.
2. Press on the finger nails so as to drive the blood out. Release the pressure and see the capillaries fill with blood.
3. Note the small blood vessels on the eyeball.
4. Find the veins on the back of the hand.
5. Find the arteries on the temples; on the ball of the thumb.
6. Watch a pump at work.
7. What other things can you think of to show how the circulation works?

Review and Thought Questions

1. In what way is the heart like a pump?
2. What is the difference between the work of the right side of the heart and that of the left side?
3. How do vacations affect the number of red corpuscles?
4. What is the work of the white corpuscles?
5. What would happen if blood did not clot?
6. Is it more dangerous to cut a vein or an artery? Why?
7. What other questions do you want to ask about the heart and the blood vessels?

CHAPTER XVI

PLAY AND HEALTH

The Fun in Play. Nearly every animal you know plays. Have you ever watched a kitten chase a spool across the floor or colts running and biting each other in a pasture? Calves and pigs and puppies all play.

If you will stop to think for just a moment, you may remember that you spend a good deal of your time in play. When you are not getting your lessons, eating your meals, helping father, mother, or your teacher, or sleeping, you are playing.

You may wonder why animals and boys and girls play. One reason is that they like to play.

Play makes the Muscles Strong. Every time we move we use the muscles. When you walk, run, teeter, play volley ball, or chop with a hatchet, you use your muscles. Even when you are sitting or standing perfectly still you are using the muscles. If you feel of the muscles of your legs while you are standing, you will find them hard. When you are sitting you are using muscles to hold up your head. What would happen if your muscles were not used while you were standing or sitting?

In both play and work we need to have strong muscles. Mowing a lawn and playing baseball require the use of muscles. Some kinds of play do not bring in many muscles. Playing dolls or marbles is quite different from playing tag or volley ball. Every day we need to exercise



Courtesy of Playground and Recreation Association of America

FUN IN SUMMER

the big muscles of the arms, legs, and trunk if we wish to have strong muscles. What games will do this best?

Play makes Boys and Girls Grow. Muscular play helps to make children healthy. Children who are healthy always grow.

If possible, every child should play out in the open air from one to three hours every day. Fresh air and exercise give one an appetite. Perhaps you still remember

a long walk you once took in the cold air. How hungry you were! How good the food tasted!

Muscular exercise strengthens every organ in the body because it gives the body work to do. The heart, lungs, stomach, and intestines have more to do. We then eat more food, drink more water, and breathe more air. All these things are necessary for healthy living and growth.

Learn to play New Games. It is fun to play the old games you know, but every child enjoys learning a new game. Here is a list of games good for children of your age. Some of them can be played indoors.

Bean-bag toss	Hound and rabbit
Hopping relay race	Bull in the ring
Bean-bag relay	Jump the shot

How many of these games do you know how to play? Try to find out how to play every one with which you are not familiar. Do you know of any other games you might play out of doors?

Playful Exercises Indoors. It is always better to play out of doors if the weather is pleasant, but in most schools a few minutes are used between classes for some sort of exercise. Here are a few exercises with the fun of make-believe in them. If you do not know them, try each one now.

Shaking fruit from trees. Stand on tiptoe, with the arms raised high over the head. Shake the fruit from the branches from eight to ten times in quick succession.



FUN IN WINTER

over the left shoulder, and chop down hard; then raise over the right shoulder. Try to keep the back flat. Repeat, changing shoulders, from ten to sixteen times.

Blowing up paper bag. Hold the bag in the right hand. Take in a deep breath. One! blow up the bag. Two! burst the bag.

Jack in the box.

Stand with the feet somewhat apart. Then stoop just a little when your teacher or leader counts one. As she counts two spring high in the air eight or ten times.

Flying. Run around the room, with the arms waving like the wings of birds.

Chopping kindling.

Stand with the feet apart, raise the ax

Play Hard and Fair. It was Theodore Roosevelt who said, "Play hard when you play, but when you work do not play at all." What he meant was that no matter

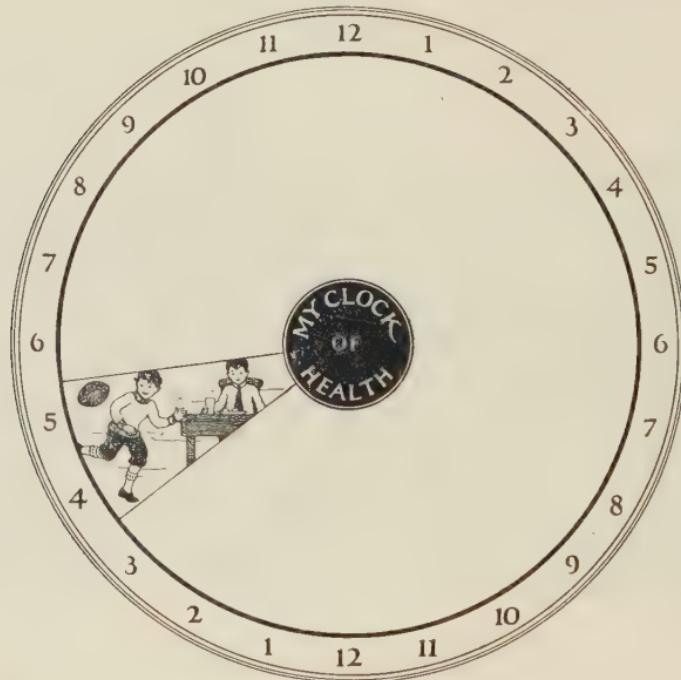


DOING THEIR BEST

what we do, we are to do it with all our might. Roosevelt believed that playing hard and working hard would lead to health and success. He proved what he preached, for he was a leader not only in play but also in his work of soldier, author, and explorer. One thing that will help you to work hard is to do your work first and then play afterward. Try it.

Roosevelt also believed in playing fair. Cheating he despised as much as lying and stealing.

Rest Before and After Meals. If we play hard right up to mealtime we are likely to feel so tired that we lose



FINISH THIS CLOCK OF HEALTH ON A LARGE SHEET OF PAPER. WHEN WILL YOU WASH YOUR FACE AND HANDS, COMB YOUR HAIR, EAT, GO TO SCHOOL, REST, PLAY, AND SLEEP?

our appetites. It is a good plan to stop playing for ten or fifteen minutes before a meal or at least long enough to wash our faces and hands and quiet down from the excitement of play. Without such rest we shall not be

as strong as we should like to be and we shall not grow as fast. When we are tired we cannot eat as much as we should and the food does not digest as well.

Neither should we play too soon after eating. The blood is needed at the stomach to help digest the food. If the muscles are exercised violently the blood goes to the skin. The stomach cannot do its work well. We should rest both mind and body after eating.

Remember

1. It is fun to play.
2. Play in the open air is best.
3. Play is good for the muscles and the mind.
4. Roosevelt's advice about play.
5. What other things do you remember about play?

Health Habits

1. Work when you work and play when you play.
2. Stop playing long enough before meals to wash your face and hands and quiet down.
3. Rest a while after meals.
4. Play in the open air.
5. As you grow older keep up your play and take vacations regularly.
6. Name other health habits.

Things to Do

1. Play all the games told about in this chapter.
2. Play games that teach you geography and arithmetic.
3. How far can you jump?
4. Double up your fist to show the big muscle in your arm.
5. Take some Saturday walks with your teacher. Talk over the things you can do to make a walk interesting.

Review and Thought Questions

1. Why do kittens play?
2. How will clean, fair play help us to be successful?
3. May children play too much? study too much? What is the proper thing to do?
4. Why is play necessary for good health?
5. What is a vacation good for? How should it be spent?

CHAPTER XVII

GOOD POSTURE AND HEALTH

Two Ways of starting Life. James and Charles were born on the same day of the month and in the same year. They lived in the same town, went to the same school, and had the same teacher.

You might think that they would be very much alike, but really they were quite different. James learned very early to sit, stand, and walk in the best way. Charles formed some very bad habits. James grew up to be a handsome boy. Charles became very slouchy. Every day he grew uglier and uglier in appearance.

Before hearing more about James and Charles there is something you might like to know about the bones that make up what is called the backbone.

Having a Good Backbone. What we call the backbone is really not a bone at all. It is made up of a long chain of thirty-three little bones called vertebræ. These are held together by muscles and ligaments. In between these little bones are pads of soft material called cartilage.

The backbone is one of the wonders of the human body. It is so strong that it will bear a very heavy burden.

Notice a man carrying a heavy bag of potatoes on his back. The backbone is also as easily bent as if it were made of rubber. See how it bends when you stoop over

to pick up a book or a pencil on the floor.

Habits are formed early by the backbone. If children eat plenty of nourishing food, get plenty of sleep, and sit and stand in the right way, their backbones will naturally have good habits.

James had a good backbone.

The Boy for the Position. One vacation James and Charles wished to get a position as a clerk in an office. They read the



JAMES

CHARLES

Which boy is getting the better start in life? Why?

notice in the daily paper and went to see the manager on the same day. The manager had a long talk with each of them and asked many questions. He promised to

let them know about his choice the next day. They were both honest, studious, and industrious. James got the position. Do you know why? If you had been the manager, which boy should you have chosen?

Habits for Success. Charles had many of the habits that make for success. He was clean, honest, and polite. Everybody liked Charles, just as everybody liked James.

There was just one reason why James got the position instead of Charles. James stood erect, with head up, chest high, back flat, and weight placed evenly on both feet. Charles was bent over and slouchy when walking, standing, or sitting. He did not look like the fine, reliable boy he really was.

Charles lost his chance because he had got into bad habits of posture.

Why Good Posture Pays. It is worth while for every boy and girl to have the body straight and strong. One of the first reasons is that it looks much better. Look at the pictures of James and Charles. Have you any doubt which one you would rather be like?



THE BACKBONE

A chain of small bones

Another reason is that one feels better. If you stoop, how can you expect to feel strong and full of life when your lungs, heart, and stomach are so cramped that they cannot do their proper work? After you have learned how, it is much easier to take an erect position. When the body is crooked, it is much harder to stand. Boys and girls who form the habit of being erect breathe and move with ease. They do not get tired easily. Such children feel better. They have more energy for play and work.

Good posture helps to give us color. The heart is better able to pump the blood over the entire body. The breathing is better. Good posture helps to make rosy cheeks.

To sit, stand, and walk correctly is like having money in the bank. Do you know why?

Learn to Use your Body. You know that when you first get a bicycle you need to learn how to use it. You need to know how to keep your balance on the bicycle and how to guide it. Until you learn these things you cannot ride the bicycle, and it is not much fun. After you know how to ride, a bicycle may be very useful.

The body is a human machine, and we need to learn how to use it. If we do not use it rightly, it may become bent, crooked, and ugly.

We may grow Straight or Crooked. Whether we are to be straight or crooked depends on the way we stand, sit, and lie while we are children.

The bones of little children are soft and bend easily. If they have bad posture as children it will be difficult to correct this when they are older and their bones have grown hard.

Have you noticed that when a little tree is bent over and is allowed to grow that way, it cannot be made straight? It will always be an ugly tree. So it is with children. If the muscles, joints, and bones get bad habits in childhood, they will stay that way in later life.

Are you growing straight or crooked?

Stand Tall. The best way to stand is to have your body stretched up as tall as possible. Your head should



TRY TO STAND AS WELL AS
JAMES DOES

be erect, your chest drawn up, your stomach drawn in, and the weight forward. Look at the picture of James on page 145 and try to stand as he does. Try many times during the day to draw yourself up to your full height.



WHAT A FINE-LOOKING BOY CHARLES
WOULD BE IF HE STOOD ERECT

When you walk keep the same position. Walk with head up, as if you were not ashamed to look anybody in the eye. Stand and walk as if you were proud of yourself, your school, and your town.

One of the very worst habits is that of allowing your head to droop forward.

Stand with the Same
Weight on Each Foot.

There are other good standing habits that boys and girls will form if they wish to have good health and fine-looking bodies.

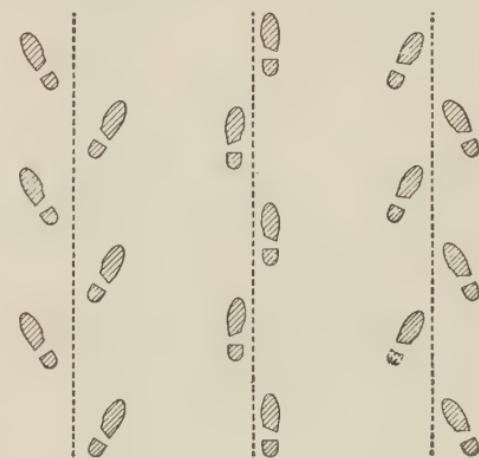
One of these is to stand with about the same weight

on each foot. Look at Charles's picture. He is throwing most of his weight on one foot. To keep his balance, his body is twisted out of shape, making his back ugly. This leads to the bad habit of standing with one shoulder higher than the other. If Charles continues to stand in this way his back will grow out of shape.

Stand with Toes pointing Straight Ahead. The position of the feet has much to do with good posture. If you were to stand with your toes pointing outward and your heels together, you would find your feet and ankles getting tired. It would be harder to stand straight.

To have good feet that will carry you on hikes, stand and walk with your toes pointing straight ahead. Some day walk in the sand or on freshly fallen snow and notice your tracks. Which way do you walk?

Sit Tall. Try to sit tall. Bend your body only at your hips. It is all right to bend forward or backward, but the back should not be bent at the middle.



WHICH IS THE BEST WAY TO WALK?
WHY?

Look at the two pictures of the girl sitting. Can there be any doubt as to which sitting posture will help her to grow up with a fine straight back. What kind of back are you going to have?



THE RIGHT WAY TO SIT

very important for us to lie in bed the right way. If we lie in bed crooked for ten hours every night, our backbones will get wrong habits. We may grow into slouchy-looking children.

A high pillow will make us crooked, a low pillow helps our bones and muscles to form good habits.

Sitting with one shoulder higher than the other is a bad habit. Sitting on the edge of your chair and leaning back is bad also. Can you tell why?

Sleep on a Low Pillow. Most of us spend at least one third of our time in bed (of course you spend more than this). It is therefore

Rest and Sleep help Posture. You have probably noticed that when you get tired you do not have as good sitting or standing posture as you have at other times. Look again at the girl in the picture here. Notice how she is sliding down in her seat so that her back is bent like a bow. Probably she did this when she was tired. If she is not careful it will become a habit.

When you begin to feel very tired, it is a good plan to rest. A good way to rest for a few minutes is to lie down flat on a couch or bed. The hands should be behind the neck with the elbows touching the couch or bed.

Sleeping many hours at night makes you feel strong so that you can have good posture.

Eating improper food is one cause of bad posture. The body does not have proper strength to stand or sit erect.



A SLOVENLY POSTURE

Children who are not well nourished get tired easily. A slovenly posture is then likely to result.

Review some of the chapters on foods. What are the most nourishing foods? What foods should children avoid if they are to have good bones and muscles?

Remember that good posture will help to make you healthy and happy.

Remember

1. Good posture pays.
2. Good posture helps to make you think well of yourself and to make others think well of you.
3. Your posture for life will be fixed in your childhood.
4. Good posture promotes health.
5. Good posture promotes good looks.
6. Rest, play, and food have much to do with posture.
7. What else can you remember from this chapter?

Health Habits

1. Stand tall.
2. Sit tall.
3. Walk tall.
4. Save your feet from broken arches and corns by wearing proper shoes and walking properly. Wrong foot habits in youth mean crippled middle age.

5. Get the walking habit. Walk every day, and on Saturday or Sunday or holidays take long hikes.
6. What other health habits do you think of?

Things to Do

1. Study the pictures in this text.
2. Study the members of the class to see who has faulty posture.
3. Let each member of the class walk across the floor. Let him walk a crack. Notice how he points his feet.
4. Carry heavy books under the arm. Note the effect on your posture.
5. Carry a weight on the head. As you walk across the room, note the effect on your posture.
6. Note whose shoes are too tight; whose are pointed.
7. What effect does writing on a low desk have on the sitting posture?
8. Make some good-posture posters.

Review and Thought Questions

1. Why does good posture help one to succeed?
2. How does it promote good looks and good health?
3. How does play teach us to use our bodies?
4. What have the joints, the muscles, and the bones to do with posture?
5. What does the backbone have to do with posture?

CHAPTER XVIII

KEEPING CLEAN

After the Rain. If you have ever walked along a dusty road on a hot summer day, you know how dirty everything looked. The leaves and flowers were grimy with dust and dirt.

Perhaps that very afternoon or evening there was a gentle shower. It laid the dust and washed the leaves and flowers clean. How fresh and beautiful they looked the next morning! An ugly, dirty world was suddenly changed into one that was clean and wholesome.

Water is one of the greatest blessings we have. In some parts of the world there is great difficulty in getting plenty of water because it seldom rains; so people are forced to save every bit of rain water they can. They find it hard to keep clean. Here in America we have plenty of water. Every boy and girl has enough to keep clean.

Clean Children. If children work hard and play hard, as they should, they will get dirty. Nobody thinks there is anything queer about that, but everybody expects to see clean children at the table, in church, and at school.

In this great, busy world there is no place for children who habitually have dirty hands, faces, and clothes. Nobody cares to have them around or to have them for friends. Only boys and girls who keep themselves clean stand much chance of being successful.

Clean Hands. It is ever so much easier to get along through life successfully with clean hands.

John is a pleasant boy, but he goes to school with very dirty hands. His teacher never allows him to pass any of the clean papers out to the class because he would get them soiled. Sometimes he is not invited to parties because his schoolmates are ashamed to introduce him as one of their friends. Should you enjoy having for one of your friends a boy who was too lazy to keep his hands clean?



DIRTY HANDS

Do you wonder why John is not allowed to pass clean papers in class?

John has another bad habit, which he is trying to break. He often puts his pencil into his mouth. This is a good way to carry dirt and filth into the mouth. Remember to put only food, the toothbrush, and dental floss into the mouth.



ONE OF THE STEPS ON THE ROAD TO
SUCCESS

In some vacation John may try to earn a little money. Do you think people will be as likely to hire him as they would be if he kept his hands clean and kept pencils out of his mouth?

Wash your Hands before Eating. Have you formed the habit of washing your hands thoroughly before you sit down to the table?

This is one of the very best health habits that boys and girls can learn. Some of our food, as you know, we handle with our fingers. This means that filth may be carried to our mouths along with the food. Clean hands at mealtime would prevent much sickness in the world.

At least once every day we should wash our hands in warm water and use plenty of soap. Warm water is better for cleansing than cold water. If your hands are very grimy, scrubbing them with a stiff brush will help you to keep them clean. Do not forget your wrists when you wash. If you do, you will have a very dark strip above your hands.

If we are to have the respect of our friends, of course we must wash our faces, necks, and ears frequently. It is very necessary to dry the skin thoroughly after.

washing. If we forget, the skin is likely to chap, and then it will be almost impossible to keep it clean.

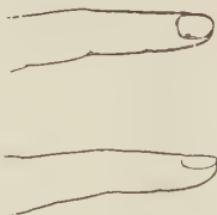
We should be careful to use our own towel. The roller towel that has been used by many people is dangerous.



BEWARE OF THE ROLLER TOWEL

Clean and Cut the Finger Nails. No matter how clean we wash our hands, they will look unsightly if we have long finger nails with quantities of black dirt underneath them.

In caring for our finger nails we should cut them in a curve with a pair of curved scissors. Filing the cut edges helps to make them smooth.



CLEAN BOYS AND GIRLS TAKE GOOD CARE
OF THEIR FINGER NAILS

Never scrape the surface of the nail.

Biting the nails is a very bad habit. It not only makes the finger nails unsightly, but it is one of the ways in which dirt and germs may be carried into the mouth.

Nobody will hire a nail-biting boy or girl. People do not like to have them around. It is a sign that one has not learned self-control.

In caring for the toenails we should cut them straight across. This will prevent the nails from growing into the flesh and causing pain. Ingrowing toenails are often caused by wearing shoes that are too tight.

Take a Full Bath at least Once Every Week. To keep the body free from disagreeable odors we need to bathe the whole of it at least once every week with soap and clean warm water. If we play hard or work in the dirt, it is desirable to take a bath oftener than once a week.

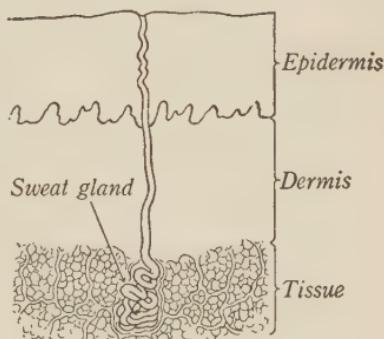
A warm bath is especially good when we feel very tired and the muscles are sore or when we feel as if we were coming down with a cold.

The best time to take a warm or hot bath is just before going to bed.

A Study of the Skin. If we know something about the skin, we shall understand why we must bathe frequently.

There are two layers of the skin. The outer layer is called the false skin, or epidermis. It has no nerves or blood and is largely dead material. This is especially true of the outer part, which is dry and has scales that are always being worn off. The outer layer protects the second, or inner, layer of skin.

The inner layer is called the true skin, or the dermis. It has nerves and is very sensitive. Probably you have found this out when you have lost some of the epidermis by accident. The dermis has blood vessels.



A SECTION OF THE SKIN

Passing down through the epidermis and the dermis are little tubes which coil up into balls. They are surrounded by little blood vessels. These tubes are called sweat glands. These glands take from the blood vessels water and salt and pour them out through the holes, or pores, in the skin. This watery fluid is called sweat or perspiration. It helps to cool the body when we get very hot. The liquid dries up, but leaves salt and other materials behind on the skin.

There are also oil glands in the skin which open into little pits from which hairs grow. (See the drawing on page 164.) These glands pour out on the hair and skin a kind of oil which keeps the skin soft and also keeps it from drying and chapping.

In the course of a week, then, there are scales, salt, and oil left on the skin which need to be removed with a good warm bath.

Take Cool Sponge Baths. The cool bath is not so good as the warm or hot bath for cleanliness; but if taken the first thing after rising, it will make one feel refreshed for study, play, or work. The cool bath should always be followed by a brisk rub with a rough towel until the skin feels dry and warm.

The habit of taking daily a cool bath trains the body to become a good heat-maker. When the water first

strikes the body, it feels very cold and goose flesh appears; but if we exercise vigorously, the heart soon beats harder, the blood flows faster, and the muscles make plenty of heat to drive away the chill. This enables us more easily to resist cold. The cool bath also helps us to avoid colds and sore throats.

Remember

1. The warm bath is good for cleansing.
2. Clean, well-kept hands and clean, well-kept finger nails help to make one attractive.
3. Cleanliness is a stepping-stone to success.
4. The skin has two parts, the dermis and the epidermis.
5. What other facts in this chapter do you remember?

Health Habits

1. Wash your hands before eating.
2. Use your own towel.
3. Put nothing into your mouth except your food, your toothbrush, and dental floss.
4. Take a warm, soapy cleansing bath at least once a week.
5. Take a daily sponge bath.
6. What other habits make for cleanliness and health?

Things to Do

1. Make a report to your teacher of the number of washbowls in your school for every hundred pupils. Is there hot water? soap? towels? Is the washroom clean?

2. Wash your hands and nails for inspection by a class inspector.
3. Make some health posters on cleanliness.
4. Prepare some two-minute speeches on cleanliness to give to a lower grade.

Review and Thought Questions

1. What is the use of the skin?
2. Name each layer of the skin. What is the difference between them?
3. Why should you use only your own towel?
4. Why does grease keep the skin warm?
5. What does cleanliness have to do with success?
6. Why should the hands be washed before meals?
7. What is the value of the cool sponge bath?
8. How does keeping the face clean help the complexion?

CHAPTER XIX

THE CARE OF THE HAIR

The Story of Flora and Nellie. There are two ponies in our neighborhood. Their names are Nellie and Flora. Tony owns Nellie. Every day she brings us our vegetables in a little red cart. Flora draws a cart with yellow wheels. Her master's name is Gregory. Flora brings us our milk, butter, and eggs.

They are both Shetland ponies and about the same size, but the children like Flora best because she is so beautiful. She has a sleek, soft, shiny coat. Nellie's coat is rough, ragged, dirty, and unkempt. The children love to stroke Flora's back. They seldom pet Nellie, although they talk to her and often feed her grass and apples.

One day the children asked Gregory why it was that Flora had such a beautiful hairy coat.

Gregory said: "Ponies are very much like people. They look well if they are healthy and properly taken care of. I take good care of Flora's coat. That's what makes it beautiful. Children can have beautiful hair, too, if they will only take good care of it."

A Study of the Hair. Before we begin to think very much about the care of the hair let us try to learn more about the hair itself.

The hair, like the nails, is made out of the skin. Both are just hardened parts of the skin. Each hair grows



IS THIS FLORA OR NELLIE?

out of a little sac, or follicle, in the skin. The living part of the hair is in the follicle. As this living part is pushed outward it becomes dead like the outer layer of the skin. That is the way the hair grows.

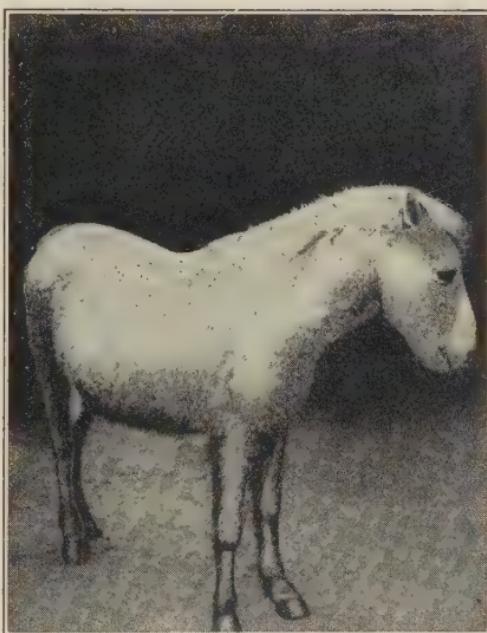
The scalp has many oil glands that pour out oil near the root of each hair. This keeps the hair oily and

prevents it from breaking. Some scalps have much more oil than others. The dry scalp needs to be rubbed now and then with a little oil.

Good Health helps the Hair. The hair is a part of the body. If the body is strong and healthy, the hair is likely to be soft and glossy. This means that anyone who wishes to have beautiful glossy hair must first of all learn to take care of his health.

Eating the proper food, drinking plenty of water, playing in the open air, and standing tall are some of the habits that we need to have for robust health. How many more of them can you think of?

Shampoo the Hair. Everybody who delights in being clean washes his face several times every day and takes a warm bath at least once every week. But how many times do the same boys and girls wash their heads when they wash their faces and take a bath? Many boys



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WHICH PONY IS THIS?

and girls forget to wash their heads, yet the head gets dirty as much as any other part of the body. Dirt sifts through the hair and sticks to the scalp. The oil and the dead scales from the skin soon make the head feel very uncomfortable.

The hair and scalp should be shampooed whenever they get dirty. Boys need a shampoo at least once a week, and girls need one every two weeks.

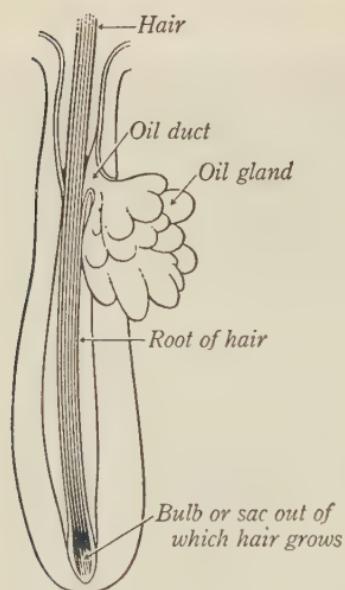
For shampooing you need a washbowl, plenty of lukewarm water, some cold water, a pure liquid soap, and a bath towel.

Fill the washbowl with warm water, make a good lather with soap, and then rub the lather

thoroughly into the scalp and through the hair.

The hair and scalp should then be rinsed in several changes of clear warm water. The last rinsing, especially in winter, should be with cold water. This prevents catching cold.

After the shampoo the hair should be wiped thoroughly with a bath towel. Whenever possible the head should



SECTION OF A HAIR

be dried out of doors in the sunshine. It is generally a good plan to rub a little oil into the hair after each washing. Coconut oil or white vaseline is good.

The Drake's Delight.

"In Lincoln Park each morning we pass a beautiful drake. His many-colored feathers are always shiny and well kept. One reason is that he spends a large part of his time keeping his feathers in good shape. The keeper feeds him, so he does not have to hunt his living, and he can spend his time making himself attractive for his mates.

"He stays in the water a good deal; this washes his feathers, but that does not satisfy him. I notice that he grabs a grease gland near his tail with his beak and squeezes out a little oil into his mouth, and then he goes over his coat feather by feather, cleaning and oiling it.



SHAMPOOING IS A NECESSITY FOR
HEALTHY HAIR AND SCALP

"No girl could spend so much of her time brushing or fixing her hair; but even a small part of her time spent that way will keep her hair very pretty, and the boy who emulates this drake in even a small way need not

expect to be a bald-headed man—a regular fly skating-rink."

Brush your Hair Morning and Night. To have beautiful hair it is necessary to brush it well every day. The brushing helps to keep it clean. It also brings the blood into the scalp. This feeds the hair and makes it grow. Brushing also spreads out the oil and makes the hair smooth.



BRUSHING THE HAIR MAKES IT
HEALTHY AND BEAUTIFUL

It is a mistake to wet the hair every time it is combed or brushed. This washes out the oil and makes the hair rough and dry.

Have your Own Brush and Comb. Even in your own home it is a good plan to have your own brush and comb.

It is an especially good plan if you are traveling. Diseases of the scalp are often spread by using somebody else's brush or comb. Pediculi (head lice) are often spread in the same way. These little animals are not good companions. They make the scalp sore and cause itching. They also spread disease. It may be bad luck to have them, but it is a disgrace to keep them.

Remember

1. The hair grows from the skin and is a part of it.
2. Good hair is a sign of good health.
3. It is also a sign of good care.
4. Pediculi are not agreeable companions.
5. It is easy to get rid of pediculi.
6. What other facts in this chapter are worth remembering?

Health Habits

1. Since one of the causes of baldness is uncleanliness of the scalp, boys should wash the hair with soap and warm water once a week; girls, once in two weeks.
2. Spend several minutes daily brushing the hair. Brush it to clean it, to make it look well, and to stimulate the scalp.
3. Use your own brush and keep it clean.
4. Look into the mirror every morning before going to school to see whether your hair is well combed or brushed.
5. To get rid of pediculi: First wrap a towel around the shoulders to keep the visitors from getting into the clothes and hiding there until the danger is past. Wash the scalp and

hair in kerosene. Wrap the head and hair in a towel and leave this on for ten minutes. Be careful about matches, fire, candles, and lights, for kerosene fumes are inflammable.

Soak up the kerosene with the towel. Wash the scalp and hair with hot soap and water. Dry with a towel. As soon as the scalp is dry, wash the hair with hot vinegar. Leave this on for ten minutes. Rinse with water and dry with a towel.

Comb the hair with a fine-tooth comb, into the teeth of which some vaseline has been rubbed.

Remove the towel from the shoulders.

Things to Do

1. Report on the looking-glasses in the washroom. Are they clean? Are they in a good light?
2. Show how to brush the hair well.

Review and Thought Questions

1. Why did Flora have such a good coat?
2. How does the hair grow?
3. What is the proper way to shampoo the hair?
4. What is the drake's delight?
5. Why should each child have his own brush and comb?
6. Why does the hair keep the head warm in winter?
7. Why is it cooler to have the hair clipped short in summer?
8. Why do men become bald?
9. Why do we need to oil the hair after washing?
10. What does the care of the hair have to do with success?

CHAPTER XX

CLOTHING

The Temperature of the Body stays about the Same. The temperature of the body changes very little. On a hot, sultry day in July or on a biting cold day in January our bodies have about the same degree of warmth.

This is fortunate for us. If our bodies became as cold in winter as the world around us, we should die promptly. Cold-blooded animals, such as toads and frogs, and insects, such as flies and mosquitoes, have a way of falling into a cold sleep which lasts until the warmth and sunshine of spring thaw them out and wake them up.

A fish can stay frozen in ice all winter, half dead but still alive, and then wake up when the ice thaws in the spring. Not so man. When the temperature of the body falls a few degrees below normal, he dies.

As it is, man is able to live, play, and work in any part of the world, no matter how hot or how cold it may be. The temperature of the grown man or woman is about $98\frac{1}{2}$ degrees Fahrenheit.

If anybody's temperature is a few degrees higher than usual, it is a sign that he is sick.

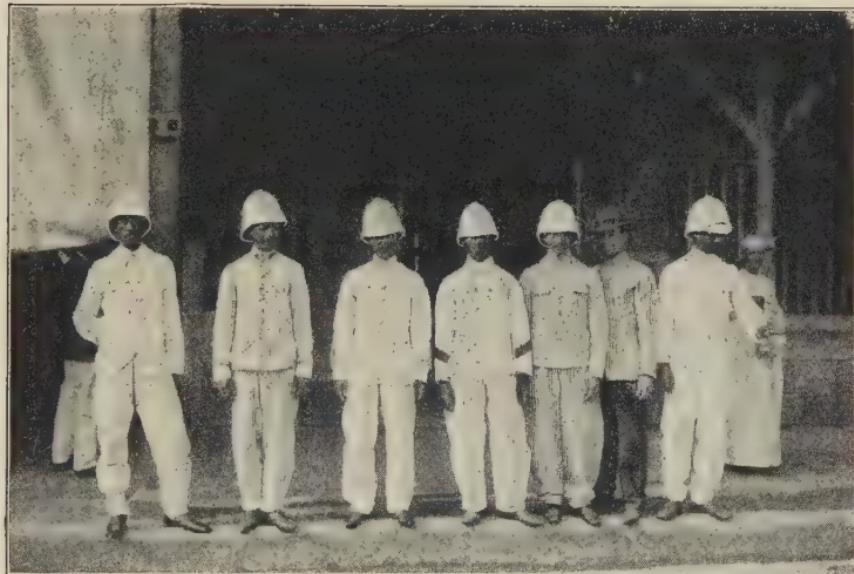
How the Body keeps the Same Degree of Warmth. Our bodies have a very interesting way of regulating the temperature. On a very hot day you might think the body would get very hot. When it starts to get hot the blood vessels near the surface of the body begin to grow larger. The hot blood rushes to the surface. You have noticed that when your hands feel hot the veins are easily seen and your hand seems swollen. When the blood rushes to the surface of the body this makes us perspire very freely. As the perspiration dries, the skin is cooled.

When the weather is cold, there is little perspiration on the skin. The blood vessels in the skin get smaller. The blood is driven into the inside of the body, where it cannot lose its heat. Everybody can do something to help the body regulate its temperature.

Helping the Body keep its Proper Temperature. Whenever the body gets too cold or too hot we feel very uncomfortable. It is hard to play, study, or work. We may catch cold also. One way to enjoy life and be healthy is to wear the kind of clothes that will help the body keep its right temperature.

This means that we should wear in summer clothing that will help to keep us cool, and in winter clothing that will keep us warm.

Clothes furnish no heat themselves. The heat comes from the body. In the winter we need clothes that will keep the heat of the body from escaping; in the summer we require clothes that will allow this heat to escape.



COMFORTABLE DRESS FOR THE TROPICS

Clothing for Summer. Cotton clothes are very popular in summer. Cotton is cheap, strong, and durable. It shrinks little after being washed and does not absorb odors readily. Its chief advantage is that it allows the heat from the body to escape quickly. It has one disadvantage. It absorbs moisture easily and allows rapid evaporation. This may chill the body. When we feel

chilly we ought always to put on more clothing, or to exercise. In this way colds may be prevented.

Light-colored clothing is preferable to dark-colored clothing in summer. It does not absorb so much of

the heat from the sun.

Clothing for Winter.

Most persons dress too warmly in the winter. Thick underclothing and other heavy clothes are not necessary in the house, since our houses are usually as warm as in summer. Heavy clothes cause us to perspire and feel very uncomfortable. The better way is to wear in our houses and schoolrooms clothing



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COMFORTABLE DRESS FOR THE FAR
NORTH

not much heavier than we wear in summer. When we go out of doors we can put on our overcoats and heavy wraps. Wearing heavy sweaters in the house is a bad habit.

For winter, spring, and fall, in a climate that is changeable, it is well to wear some woolen next to the skin.

There are two reasons for this. First, wool has a great many air spaces, and such spaces are poor conductors of heat from the body. The second reason is that wool may absorb a good deal of moisture without our feeling cold.

Probably the best underclothes for cooler weather are soft, loosely woven garments made of both wool and cotton. Our underclothes should not be colored, since the dyes may irritate the skin.

Avoid Tight Clothing.
To be happy and healthy at work and play one should be able to move freely, without tight clothing.

Garters, if tight, interfere with the flow of the blood. This is especially true if they are above the knee. Tight garters not only make the legs feel uncomfortable, but they sometimes cause the veins to get very large.



THIS LITTLE GIRL TAKES PRIDE IN
HER CLOTHES

Hose supporters when drawn too tight often cause one to stoop and have round shoulders.

Stockings, shoes, and collars all need to be large enough for comfort.

Take Pride in your Clothes. We cannot all have as expensive clothes as we should like, but we can look neat and clean.

Just before you get ready for school look over your clothes. Are your shoes shined? Are there any spots on your clothes? Are they soiled or wrinkled? Are there any buttons missing?

Remember that wearing soiled stockings and other clothing causes a disagreeable odor which is not pleasant for schoolmates and friends.

A clean body, clean clothes, and polite manners help every boy and girl to be happy and successful.

Remember

1. The temperature of the human body always remains about $98\frac{1}{2}$ degrees Fahrenheit.
2. If it tends to rise, perspiration cools it off; if it tends to fall, the blood leaves the skin.
3. In fever the temperature may rise to 105 degrees or higher.
4. What else do you remember from the reading of this chapter?

Health Habits

1. Wear clothes suitable to the season and the climate.
2. Dress very lightly in warm weather.
3. Dress lightly for indoors in cold weather.
4. Wear fairly heavy and closely woven woolen garments for outer coverings when you go out in cold weather in winter.
5. If you must be out of doors in very cold weather, wear loose woolen socks and loose, well-greased shoes.
6. Avoid getting chilled and remaining cold.

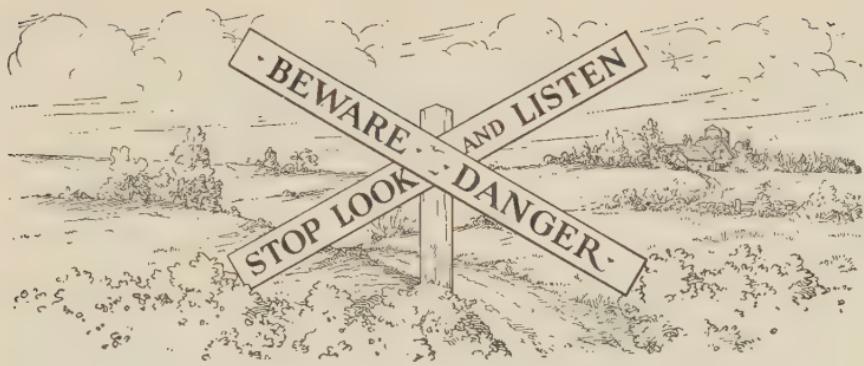
Things to Do

1. Inspect your own clothing for neatness.
 - Are your shoes shined?
 - Is your clothing clean?
 - Are there any buttons missing?
2. Examine different pieces of cloth and notice the different kinds of air spaces.
3. Put some tepid water on the back of one hand and some naphtha on the back of the other. Wait for them to dry. Which is cooler? Why?

Review and Thought Questions

1. Why is it that man can live successfully in any climate from the equator to the pole?
2. Do air spaces in cloth make it cold or warm?
3. Why are furs warmer than any other kind of clothing?

4. Why do animals in colder climates have heavier pelts than those in warm climates?
5. Why can a polar bear sleep on an iceberg?
6. Why should one wear no tight garters?
7. How does sawdust keep ice from melting?
8. When you say that clothes are warm do you mean that they have heat in them?
9. How should one dress in the schoolroom?
10. When should we wear sweaters?
11. Does it pay to take pride in one's clothes? Why?
12. What do clothes have to do with success?



CHAPTER XXI

SAFETY FIRST

Be Careful, John and Mary. It was a beautiful winter's day. The snow lay deep everywhere. John and Mary were having great fun sliding down the hill and across the street below. There the automobiles whizzed along. Now and then a sleigh passed, with bells jingling.

John and Mary were so happy in their sliding that they did not notice the automobile coming up the street. The man driving the car did not see the children sliding until they were almost upon him. He tried to stop, but it was too late. There was a loud crash, and both children were thrown against the automobile. The ambulance came, with its bell clanging, to take them to the hospital. Arms and legs were broken. Both children had ugly wounds on their heads. It was many weeks before they

got back to school. They were absent from school so long that they could not be promoted at the end of the year.

You say, "It is too bad that the children were hurt." Yes; we should feel sorry for John and Mary because they had an accident. We should feel sorry for all boys and girls who have bad habits that lead them into danger.



CARELESSNESS NEVER PAYS

Do you think John and Mary were mostly to blame for the accident? What should you have done if you had been in their place?

Stop, Look, and Listen. You see these words at every railroad crossing. They are put there because before crossing the track many people never stop to look up and down the track and to listen and find out whether

the train is coming. If they did what the signboard says, there would be fewer accidents.

Most of the children who read this book may not cross the railroad track on their way to school, but they are



Courtesy of the Travelers Insurance Company

IT IS DANGEROUS TO PLAY IN THE STREET

very likely to cross the street. Our city streets and even our country roads are often more dangerous than railroad tracks. On the railroad there are trains now and then, but on most city streets there is always a stream of automobiles, wagons, trucks, bicycles, and motor cycles. Many accidents happen on the streets every day

because someone was careless and did not stop to think. Most accidents can be avoided.

Here are a few rules to follow in crossing the street if you would be safe:

1. *Look up and down the street before crossing.*
2. *Cross at the regular crossing. Do not try to pass until it is safe.*
3. *If there is a traffic officer, obey his signals.*
4. *Never run in front of or just behind a car, an automobile, or other vehicle. Take plenty of time. Let the automobile or wagon pass.*
5. *It is not safe to "catch" or hitch on to a wagon, a car, or an automobile.*
6. *Never play on a railroad track or on the street.*
7. *If you must walk along a roadway, walk on the left side so that you may face the traffic coming toward you.*

How many of these rules do you follow?

Safety for Others. We can all make the home, school, and street safer if we look out for the safety of others.

It is all right to have fun in your play, but some things meant for fun are really dangerous and cruel. One of the most common is pushing or tripping somebody to see him fall. Often this leads to a broken arm or other injury.

Among the many things we can do for the safety of others are the following:

1. *Picking up banana skins, rusty nails, pieces of glass, and other objects which might lead to injury.*



A GOOD WAY TO GET HURT

2. *Never throwing sticks, stones, or hard snowballs toward anybody. Injury for life sometimes follows.*

3. *Never playing carelessly with sharp sticks, stones, pea-shooters, sling-shots, and arrows.*

4. *Being careful in handling pens, pencils, compasses, knives, scissors, etc.*

5. *Not leaving baskets, or other objects on the stairs or in hallways where somebody may fall over them.*
6. *Helping the younger children across the street.*
7. *Keeping all medicines and other harmful things out of the way of young children.*
8. *Never pointing a gun at anybody, even in play.*
9. *Never starting a bonfire near a building.*

Do not Play with Matches. Nearly all fires are unnecessary. They happen because people are careless.

Look carefully over your newspaper every morning for a week to see how many news items on fires you can find. Try to find out the cause of each fire.

Playing with matches is one cause of fire. Children often get their clothes on fire and are severely burned. Houses are sometimes set on fire in the same way.

One cannot be too careful about matches. They



PIECES OF GLASS ARE DANGEROUS

should be kept in an earthen dish or a metal box with a cover. Then if they should happen to get on fire they will do no harm. Sometimes when matches are not in a safe place rats or mice may gnaw them and cause them to burn. Many fires are started in this way.

After using matches, throw them into some kind of earthen or metal container. It is dangerous to throw a used match into a wastebasket, because we may not notice that a match is burning when we throw it away. *Every time you use a match see that it is out before you throw it away.*

Fires are often caused by pouring kerosene or gasoline into a stove when kindling a fire or by putting hot ashes into wooden containers.

Bonfires and all outdoor fires should be made a long distance from a building or from any material which easily catches on fire. Grass fires are always unsafe for surrounding property.

Remember

1. A very large number of accidents happen to children.
2. Many of these happen on the street.
3. All accidents except street accidents are becoming fewer.
4. Many children lose their lives, and others lose their sight or their limbs, as the result of street accidents.

5. To prevent accidents, take heed.
6. Carelessness with matches causes many fires.
7. What other facts in this chapter should be remembered?

Health Habits

1. Think twice before you take a chance.
2. Form the habits of personal safety given on page 180.
3. Form the habits of looking out for the safety of others given on pages 181 and 182.

Things to Do

1. Start a Safety-first Society in the class.
2. Start a Sane-Fourth Society in your school.
3. Write to the National Safety Council, Chicago, for some "Safety-first" printed matter. Post it on the bulletin board or distribute it in the class.
4. Get a traffic squad to look after the safety of the younger children when crossing the street.
5. Prepare some two-minute talks on safety to be given before children of a lower grade.

Review and Thought Questions

1. Can you think of some good habits to have when coasting downhill?
2. Can you think of some other things that you can do for your safety besides those mentioned on page 181?
3. What are the children in your school doing for the safety of others?

CHAPTER XXII

BURNS, CUTS, BRUISES—WHAT TO DO

The Skin protects us. No matter how careful we may be at our work or play we may have some accidents. The body does the best it can to protect us. Did you ever stop to think that the body is inclosed in a tight-fitting bag called the skin? As you know, the outer layer, or epidermis, is not the least bit sensitive. It protects the second layer, or dermis, and both of them protect the tender flesh underneath. When the skin is cut or burned, the flesh underneath is hurt, and we feel very uncomfortable. We all need to know what to do at such times to take care of our injuries.

Keep Air away from Burns. When you burn yourself you need not bother to wash the burn with water, for the heat has killed the germs. The first thing to do is to keep the burn covered from the air. To do this, cover it with a paste made of baking-soda mixed with water. Smearing it with some kind of grease also will keep away the air. Lard or vaseline is good. Keep on the grease or baking-soda until the pain is gone. Cover the burn with a piece of clean cloth and bandage it loosely.

If you are burned seriously, call a physician at once. It may save you much pain and trouble.

If Anyone's Clothes get on Fire. If the clothes of one of your playmates get on fire, throw him down quickly and wrap him up in anything you find at hand. It may



QUICK THINKING AND ACTING OFTEN SAVE LIFE

be a blanket, a coat, or a rug. Then roll him over and over as fast as you can. If you remember what to do, you may save somebody's life.

It is always dangerous to run when one's clothes are on fire, because the blaze is fanned. If there is nothing to wrap up in, simply roll on the floor or ground and try to beat out the blaze with your hands.

Caring for Small Cuts and Scratches. Whenever there is any kind of break in the skin, there is always a danger that it may become very sore. The doctor would say that it had become infected. He would mean that dirt and germs had got into the wound. This may be so serious as to cause blood-poisoning. Even a scratch of a pin, if it is not taken care of, may lead to blood-poisoning. You can see how important it is to care for every break in the skin promptly.

As soon as the bleeding from a slight cut or scratch ceases the cut should be washed or painted with iodine. Then it should be covered with a clean piece of gauze.

If slivers get into the fingers, they should be removed with a needle which has been well cleansed of germs by being passed through a flame. After the splinter is out, the hole it made should be treated like an ordinary cut or scratch.

An important thing to remember about any break in the skin is to keep it clean.

Care of Bruises and Sprains. Sometimes when children are at play they fall and bruise themselves so much that some of the little blood vessels under the skin are broken. Then they have black-and-blue spots. Usually these bruises are so slight that we do not need to pay any particular attention to them.

If we feel very uncomfortable, one of the best things to do is to lay over the bruise a cloth soaked with hot water. Heat will soon relieve the pain.



A GOOD WAY TO STOP NOSEBLEED

A sprain is caused by the overstretching of the muscles or ligaments about a joint. The injured joint should be placed in water as hot as can be borne. As this water cools more hot water should be added little by little to keep the water hot for at least an hour.

A cold treatment also is good. Put an ice bag on the joint

and keep it there for several hours. The joint should then be bandaged tightly and kept propped up in a chair or stool. A few days of quiet and rest are then needed before trying to use the injured joint.

What to do for Nosebleed. The usual nosebleed will stop soon because the blood clots readily. When the

nose begins to bleed, remember not to wash or blow the nose because the clot will not form if you do. The head should be held high up. Lying down encourages bleeding.

If the bleeding does not stop soon, cloths wrung out of ice water should be applied at the back of the neck and over the nose.

If the bleeding still goes on, we should follow these directions: Sit quietly with the elbows on a table or on the arms of a chair. Lean far forward, with the weight of the head resting on one hand. Grasp the nostrils between the other thumb and forefinger in such a way as completely to cut off breathing through the nose. Breathe through the open mouth. Sit quietly and comfortably in this position for ten minutes or even longer. At the end of this time very gradually loosen the pressure of the thumb and forefinger on the nostrils. Continue holding the head with the hand pressed against the brow for another ten minutes. Breathe through the mouth all this time. Do not wash the blood from the nose for some time. Give the blood vessels plenty of time to close before removing the clot from the nose.

Remember

1. The skin protects the body.
2. When burned, keep the air away from the burn with some kind of dressing such as paraffin or sterile oil.

3. Call the doctor in case of a serious burn or injury.
4. If your clothing catches on fire do not run. Wrap yourself in a rug and roll over and over.
5. Write down on a piece of paper the other things that you ought to remember.

Health Habits

1. Do not neglect slight wounds.
2. Paint cuts and scratches with iodine and cover them with clean gauze.
3. Remove slivers and splinters and paint the wound with iodine.

Things to Do

1. Show how to squeeze the nose to stop bleeding.
2. Put on a bandage.
3. Show how to paint a wound with iodine.

Review and Thought Questions

1. How is the bark of a tree like the skin?
2. Why should a break in the skin be kept clean?
3. What would you do if your clothes caught fire? What would you do if a fire started in the house?
4. How would you care for your foot if you stepped on a rusty nail?
5. What is a bruise and how should it be cared for?
6. What is the cause of nosebleed? How should it be treated?

CHAPTER XXIII

WHAT RULES THE BODY

Ears and Feet. It was recess time. The children were out in the yard playing pom-pom-pull-away. Suddenly the school bell began to ring. The children stopped in the middle of the game and raced for the schoolhouse. Soon they had hung up their hats and coats and were sitting in their seats studying their lessons.

Why did they so suddenly stop playing and run for their seats and books? You will probably say: "The bell meant that recess was over. When the children heard the bell, they ran so that they should not be late." You are right. But did you ever ask yourself how one's ears have anything to do with his feet? How does the message from the bell make the feet race for the schoolroom? That is a hard question. You may not be able to answer it. Let me help you.

Nerves carry Messages. There is a silvery thread that goes from the ear to the brain. This silvery thread is very much like a telephone wire, and is called a nerve. From the brain there are other silvery threads that go out to the muscles. The message, then, which starts from

the ear tells about the very loud noise. From the brain orders are sent out which affect the muscles of the legs, and they begin to move.

The nerves which carry messages to the brain are called sensory nerves; those which carry messages from the



GETTING THE RIGHT NUMBER DEPENDS ON THE SKILL OF THE OPERATOR AT CENTRAL

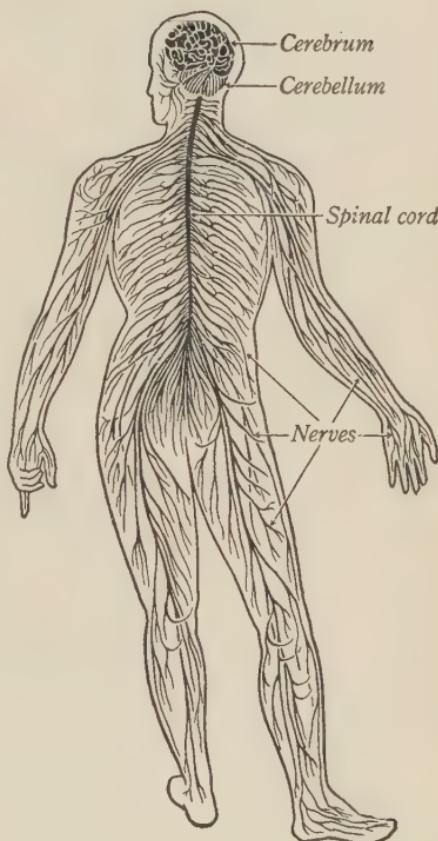
brain to the muscles are called motor nerves. The messages which go to the brain are often called sensations.

The Brain Rules. The brain is very much like a central telephone office. You know that when you wish to get Mrs. Jones over the telephone you tell central what

you want. Unless she makes the right connection you may get Mrs. Smith instead of Mrs. Jones. It is at the brain that the most important messages come in, and it is from there that the most important orders are sent out.

The brain is the seat of the mind. Without the brain we could not remember, think, choose, read, spell, figure, recite, play, talk, or move the body. The brain governs the body.

As the brain is so important, it is very necessary that it should be protected from danger. It is found in a bony box called the skull. This brain box is made of many bones that are fitted into each other very neatly. None of these bones move. The skull is one of the most wonderful parts of the body.



THE NERVOUS SYSTEM

Study this drawing as you read the chapter

The Little Brain. We need the big brain, or cerebrum, to think; but if you will look at the drawing on page 193



HOW A BALL IS CAUGHT

The rays of light (a) from the ball reach the eye (b); the message then travels over the sensory nerve (c) to the brain center (d) and is then sent out along the motor nerve (e) to the hand, which opens to catch the ball

you will notice that there is also a little brain, called the cerebellum. We know very little about its work, but we do know that it has something to do with our keeping our balance when we stand or walk.

The Spinal Cord. Leading out of the brain is a long white cord. The first part is called the medulla and that farther below, the spinal cord. The medulla looks after the breathing and the circulation.

The spinal cord is boxed in a canal which runs down the backbone. From the cord nerves run off like telegraph lines to different

parts of the body. The sensory nerves carry messages which tell how things are getting on at the outside of the body, and the motor nerves carry the orders to the muscles.

Many of the messages that pass to the spinal cord never go to the brain. If you were to tickle a baby's foot while he was asleep, he would draw it away without waking up. The message that the foot was being tickled was sent to the cord, which sent out orders to the muscles to draw the foot away, and this was done. There are many other things like this that are going on all the time without any action of the brain. Acts ordered by the spinal cord instead of the brain are called reflex acts.

Sometimes the message which goes to the cord passes up to the brain, and then we know about it, and perhaps think about it. We may decide to do something. The big central office of the brain then sends out the messages to the right muscles.

Where Messages Start. All the inbound messages start at the ends of nerves. Here we find what are called sense organs. It is through these little sense organs that we know about the world outside our own bodies and also about our own bodies. The outbound messages finally end in muscles and glands. The smell of food may lead us to chew it and may also start the flow of saliva.

The best-known organs of sense are the eye and the ear. We shall learn more about them in later chapters.

Each kind of sense organ sends us messages that no other kind of sense organ can send. Let us learn a little about each of the most important sense organs.



ONE OF THE
SENSE ORGANS
IN THE SKIN

Messages from the Skin. In the second layer of the skin there are millions of tiny sense organs that send us messages.

One group sends us messages of touch. It is in this way that we know that something has come in contact with the body. If you will touch the palm of your hand lightly with a toothpick, you will get a sensation of touch.

There are also sense organs that offer us messages of warmth and cold. These are the messages we get when we pick up a warm dish or a piece of ice.

Another kind of sensation which we get from the skin is pain. We get this very useful message when we get into danger; for example, when we step on a tack or run into a barbed-wire fence.

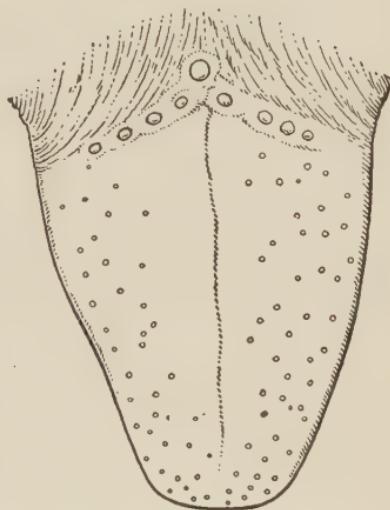
Messages from the Tongue. The tongue is a very active muscle that helps us keep our food between our teeth and also helps us to swallow it. The tongue also has

some sense organs called taste buds that send us messages about our food. These buds are not found in the middle of the tongue, but at the tip, along the sides, and at the back of the tongue. The buds at the tip of the tongue are sensitive to sweet and salt, those at the back to bitter, and those at the sides to acid or sour tastes.

The sense of taste helps us to enjoy our food and often warns us when food is unfit to eat.

Messages from the Nose. The nose is important not only because we breathe through it, but also because it has little sense organs of smell. These organs are in the upper part of the nostrils, where most of the air does not pass in breathing. When the air is loaded with different odors and strikes these little organs, we are able to smell. Do you know why you can smell so much better when you whiff the air?

It is not always easy to tell whether you are tasting or smelling. Many foods have more smell than taste. Hold your nostrils tight, close your eyes, and put out your



TASTE BUDS ON THE TONGUE

tongue. Have another pupil put on your tongue a slice of apple or onion. Can you tell which is which?

The sense of smell may tell us without our tasting food whether it is spoiled or is fit to eat. It also helps us to enjoy nature. Can you tell why?

Keeping the Brain Healthy. Since the brain is the big boss of the body, we need to keep it in good condition; otherwise it will not do its work in receiving and sending out messages.

Everything we have learned in this book about the health of the body will help us to have a healthy brain and nervous system also.

There are two very important things we need to remember particularly, if the brain is to be healthy and able to carry on its work:

1. Get plenty of sleep.
2. Do not use alcohol, tobacco, or other poisons.

Remember

1. The brain rules the body.
2. Without the brain we could not think, remember, or imagine.
3. Messages start to the brain from sense organs, and messages from the brain end in muscles or glands.
4. A healthy brain is necessary for success.
5. What other important facts do you remember?

Health Habits

1. Get plenty of sleep at regular hours.
2. Try not to worry.
3. Eat nourishing food.

Things to Do

Try all the experiments suggested in this chapter.

Review and Thought Questions

1. How are the ears and the feet connected?
2. Tell all you can about the nerves.
3. Where do messages begin? Where may they end? What are they often called?
4. What is the work of the big brain? the little brain? the spinal cord?
5. What messages come from the skin?
6. How can we keep the brain healthy?

CHAPTER XXIV

THE CARE OF THE EYES

The Story of Prescott. Many years ago among the students who gathered at Harvard College in Cambridge, Massachusetts, was a young man by the name of Prescott. One day while he was sitting at the table in the dining-hall of the college, somebody in fun threw a crust of bread. It struck him in his left eye. He never saw out of that eye again. Some time afterward the sight of his other eye began to fail. He was a hard worker and strained his one remaining eye so much that at last he was entirely blind.

It is a very sad story. Never again could he see the blue sky, the mountains, the sea, or the faces of his friends. He had to live in eternal darkness.

The story of Prescott shows us how important our eyes are. We cannot take too good care of them. Throwing, shooting, or poking anything in the direction of anybody else's eyes is always dangerous.

The life of Prescott has another and even a better lesson. It teaches that courage and perseverance will overcome any obstacle. Although blind, he was still a

student. His friends read to him, and he dictated the letters he wished to have written. In spite of his blindness he became one of America's famous historians.

How we See. The eye is very much like a camera. If you will look at the drawing of the camera on the next page, you will see that it has a little opening in front. A little way behind this opening is a lens, a piece of curved glass, which draws the rays of light together and throws them on the sensitive plate or film at the back part of the camera. When this plate or film is treated with chemicals in a dark room, we can print pictures from it.



PRESCOTT

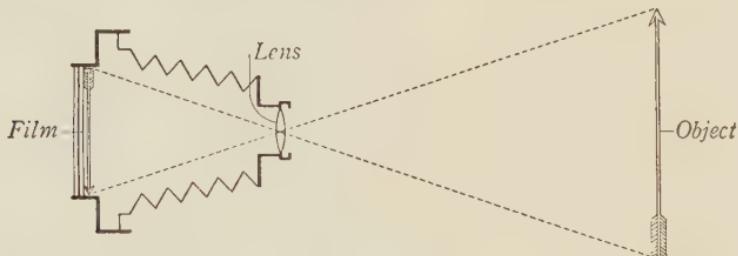
An accident due to the carelessness of another person made him blind

Now notice the drawing of the eye, and you will see that it is very much like the camera. The rays of light from the object pass through a lens something like glass and the image is thrown on the sensitive nerve coating, called the retina, at the back of the eye. This coating

is like the plate or film of the camera. As soon as the nerve carries the message to the brain we can see.

Good Eyesight at School. Boys and girls cannot expect to get along well in their studies unless they can see the print in their books and what is written on the blackboard.

Some persons have eyeballs which are too long, so that things far away make a blurred picture on the retina,



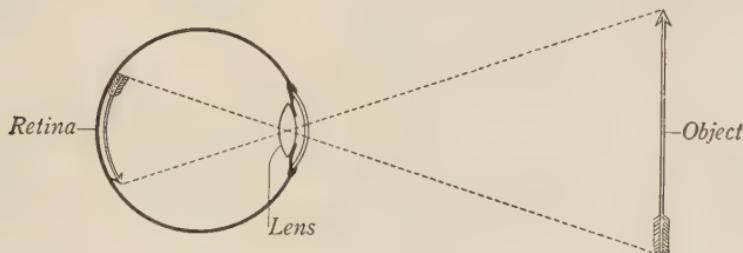
HOW A CAMERA WORKS

and only those things that are near can be seen clearly. Such a person is said to be nearsighted. Boys and girls who are nearsighted may read their books without difficulty by holding them close to their eyes. It is often hard for them to read what is written on the blackboard. Children who are very nearsighted need to have glasses.

Sometimes the ball of the eye may be too short. Then objects that are far away may be seen clearly, but objects very near may be cloudy. Such a person is said to be farsighted. Often people think that because they can see both things that are far away and things near at hand

their eyes are all right. This is not always true, for one may be farsighted and yet be able to read by straining the very small muscles of the eyes. Such a strain may lead to redness and soreness of the eyes and to headaches.

Whenever we have any trouble with our eyes it is a good plan to go to a special doctor who knows just how to treat them. Such a doctor is called an oculist.



HOW THE EYE WORKS

Test your Eyesight. Since we do not always know whether our eyesight is good or not, it is an excellent plan to have it tested. You may make the test in class or in your own home. Get somebody to work with you.

This is the way to test another pupil's eyes. Seat the pupil in a comfortable chair. Get a yardstick and measure fifteen feet from the pupil's eyes. Make a chalk mark on the floor for the fifteen feet. Make similar measurements for twenty and thirty feet. Now hold the book open at page 204 on a level with the pupil's eyes at the thirty-foot line. See that there are no shadows

on the page. Have the pupil cover one of the eyes with a piece of cardboard and read the first line of letters below. Skip around over the line and point to different letters. Can he read every letter? Now test the second

R K T C

30 ft.

Y N E V P

20 ft.

L P T V R B Z

15 ft.

eye. Try similar tests for the middle line at twenty feet and the lower line at fifteen feet. If many mistakes are made, then glasses are probably needed, and it would be a good plan to consult somebody who knows how to make a more accurate test and also knows how to fit glasses.

To test the eye for close reading hold the book fourteen inches from your eyes. If you need to hold it nearer

to read the words, you are probably nearsighted and need glasses. If you do poorly in either of the two tests mentioned, you should see an oculist at once.

Keep your Eyes Healthy.

If your eyes are healthy you should keep them so. Even the very best kind of machine will get into bad condition if it is not given the right care. Let us think of some good habits in taking care of our eyes.

Read in a Good Light.
One of the first things to remember is to read in the very best kind of light.

Never read in a dim light. It will make you strain your eyes. Reading in the twilight may injure your eyes so much that you cannot use them for many days.

There is also danger in having too strong a light, especially if one faces the light. We should never sit facing the light unless our eyes are shaded from the direct



IT IS A BAD HABIT TO FACE
THE LIGHT

rays. The correct way is to sit so that the light will fall over one of our shoulders while we read or write. It is best to have the light shine over our left shoulder while we are writing, so that there will be no shadow on our work.



GOOD HABITS SAVE THE EYES

Avoid rubbing the Eyes. When we get sleepy and when our eyes burn, we are apt to rub them. This is a bad habit because it is likely to make the eyes sore. Keep your fingers away from your eyes.

Everything touching the Eyes should be very Clean. We cannot be too careful about the handkerchiefs and the

towels we use to wipe our eyes. Serious diseases of the eye are sometimes caught by using soiled towels and handkerchiefs. If we are really careful of our health we shall insist on having our own towels at home and at school. We shall also be careful in public places never to use a towel which has been used by someone else.

Rest your Eyes. Our eyes get tired when we use them a long time, the same as any other part of the body. One way to keep them in a healthy condition is to give them rest. We can do this by looking up from the book every few minutes. As soon as our eyes begin to smart and burn, it is a sign that we need to lay aside our work for a time.

Remember

1. The eye is similar in arrangement to a camera.
2. The eye is a very delicate piece of mechanism.
3. Simple tests may show whether vision is good.
4. Should your vision be poor, have glasses fitted by someone with experience.
5. If cross-eyes are not attended to, vision is lost in the crossed eye.
6. Reading print on shiny paper harms the eyes.

Health Habits

1. See that you have a good light—neither too bright nor too dim.
2. Never strain the eyes.
3. See that the light falls over your left shoulder.
4. Protect your eyes from great heat, dazzling light, and excessive dust.
5. Rest your eyes when they feel fatigued.
6. What other eye habits promote health?

Things to Do

1. Test each other's eyes.
2. See if anyone in the class fails to read writing on the blackboard twenty feet away.
3. Is anyone in the class color-blind?
4. Examine the glasses of the students wearing glasses. Do they fit properly on the nose? Do the lenses curve on the front? on the back?
5. Draw a cross section of a camera and compare it with the eye.

Review and Thought Questions

1. Who was Prescott? What two things does his life teach?
2. How is a camera arranged? How is it like the eye?
3. How do good eyes help children in school?
4. What does the test of your eyes show?
5. What can we do to protect our own eyesight? the eyesight of others?
6. What takes the place of sight for a blind man?
7. Do you know of any persons who are blind? How did they lose their sight?

CHAPTER XXV

THE CARE OF THE EARS

A Musician's Loss. Many, many years ago there lived in Europe a remarkable musician. He not only played on musical instruments, but he made up music of his own—beautiful music. This man's name became known all over the world. Today when great orchestras wish to play the finest music, they use his selections.

One of the very sad things about this composer's life was the gradual loss of his hearing. As the years passed he heard less and less. Finally he heard almost nothing of his own music even when he led the orchestra himself.

How much more enjoyment he might have had in his later years if he had been able to hear!

The name of this great composer was Beethoven. It is probable that if he could have had his ears, throat, and nose properly cared for when he was a child he would have kept his hearing until he became an old, old man.

Have you ever thought how different this world would be to you if you were no longer able to hear? You would lose not only beautiful music but also the songs of the birds, the whisper of the wind in the treetops, and the

voices of your friends. There could be no noise and no tone. You would live in a world of eternal silence.

How we Hear. If you have ever stood on a bridge and thrown a stone into the water, you have noticed



BEETHOVEN, A FAMOUS MUSICIAN
WHO LOST HIS HEARING

that as soon as the stone struck the surface of the water it started waves. These waves spread in circles until they reached the shore or until they could no longer be seen.

Every time there is any kind of noise, waves are made in the air. You cannot see them, but they spread out in every direction. When the waves reach our ears, we say that we hear.

When you think of ears you are very apt to think of the outer ear, which is made of skin and cartilage. It is there to catch the sound waves in the air and throw them into the ear canal. This small canal, no larger than a lead pencil, is about an inch long. In it there is some wax. This is there to help get rid of dirt and to keep

insects out. At the end of this canal is stretched a curtain made of very thin skin called the eardrum. The eardrum catches the sound waves and vibrates very much like a drum when it is struck. These vibrations are carried by bones, fluid, and nerves to the brain. When the brain receives the vibration, we hear.

Good Hearing at School. Of course we need good hearing at school. Unless we understand what our teacher and the other pupils say we find it difficult to get our lessons. Often we may miss something entirely. Frequently, too, we may hear only part of something, imagine the rest, and so get it wrong.

Many children have poor hearing, although their teachers and their classmates know nothing about it.



WHEN A STONE STRIKES THE WATER IT MAKES WAVES. A NOISE MAKES WAVES IN THE AIR

This is because they read other people's lips so well that their deafness is not noticed.

Have your Hearing Tested. Let everybody in the class test somebody else's hearing. Put an open-faced watch against the ear of your classmate. Slowly remove it in

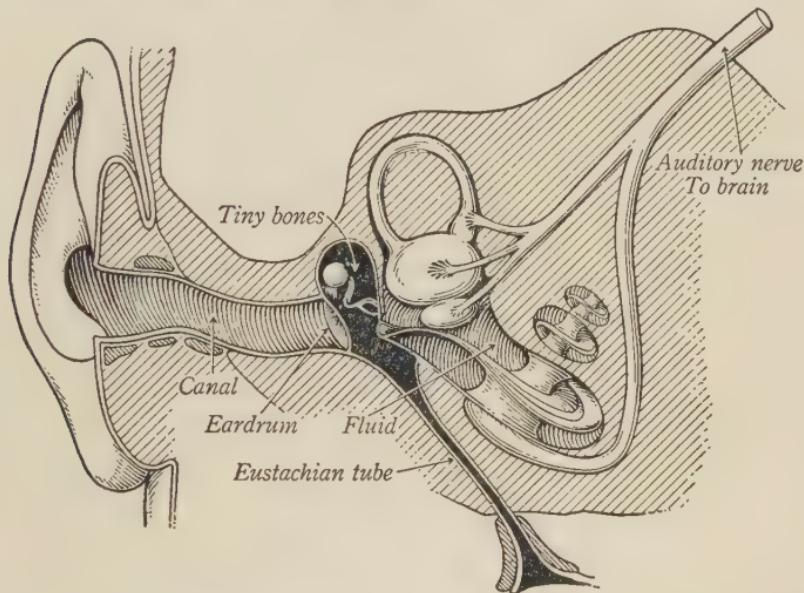


TESTING THE HEARING

a straight line level with the ear. Tell your classmate to raise his hand and keep it raised as long as he can hear the watch tick. As soon as he fails to hear it, he is to let his hand drop. Move the watch backward and forward several times. A child who cannot hear the watch tick at a distance of two feet away is hard of hearing. Test

both ears. Unless care is taken to have the room quiet during the tests they will not be accurate.

A child who is deaf in either ear should see a physician at once. Often deafness can be cured.



THE DIFFERENT PARTS OF THE EAR

The Care of your Ears. Not only is our hearing very important at school, but it is absolutely necessary in some trades and professions. Some people have been obliged later in life to give up one kind of work for another because they have lost their hearing. Can you imagine how a teacher or telegraph and telephone operators could be successful without good hearing?

Fortunately, if we take good care of our ears, there is little danger of losing our hearing.

Keep the Ears Clean. In the canal of the ears there are little hairs. Their motion works the dust-laden ear-wax out to the outer ear. The outside of the ears should be cleaned every day with soap and water and dried with a clean towel. An ear which discharges should be cared for by a physician. Do not try to remove wax from the canal. Do not pick at the ears with a hairpin or any other object. You may injure your hearing.

Care of the Ear during Illness. Any trouble with the throat is likely to pass up to the ear through the Eustachian tube (see page 213). For that reason we need to be very careful to avoid colds. Do not put any kind of oil into the ear because of earache.

Measles, whooping cough, scarlet fever, and diphtheria sometimes cause loss of hearing. We should always avoid going near anybody who has these diseases.

Remember that the best thing to do whenever you have any trouble about hearing is to go to a good physician.

Remember

1. The ear has three parts: The *external* ear is the leaflike sound-catcher and the hole down which the air travels to the drum. The *middle* ear is the chamber behind the drum. Into it opens the tube from the throat—the Eustachian tube. The

internal ear is where the sound waves strike the nerve endings which send the messages to the brain.

2. The eardrum is at the end of the canal. It is easily punctured or broken.

3. Neglect of the nose, throat, and ears in childhood often causes deafness in middle age.

Health Habits

1. Avoid sore throat. Such soreness travels up the Eustachian tubes to the ears.

2. Care for your ears. Discharging ears lead to deafness.

Things to Do

1. Test the hearing of each member of the class.

2. Find the Eustachian tube in the drawing on page 213.

Review and Thought Questions

1. What do you remember about the life of Beethoven?

2. Describe how we hear.

3. How can we take care of the ears?

4. How does soreness of the throat have anything to do with the hearing?

5. Why are so many old persons deaf?

6. What do you know about the deaf-and-dumb alphabet?

CHAPTER XXVI

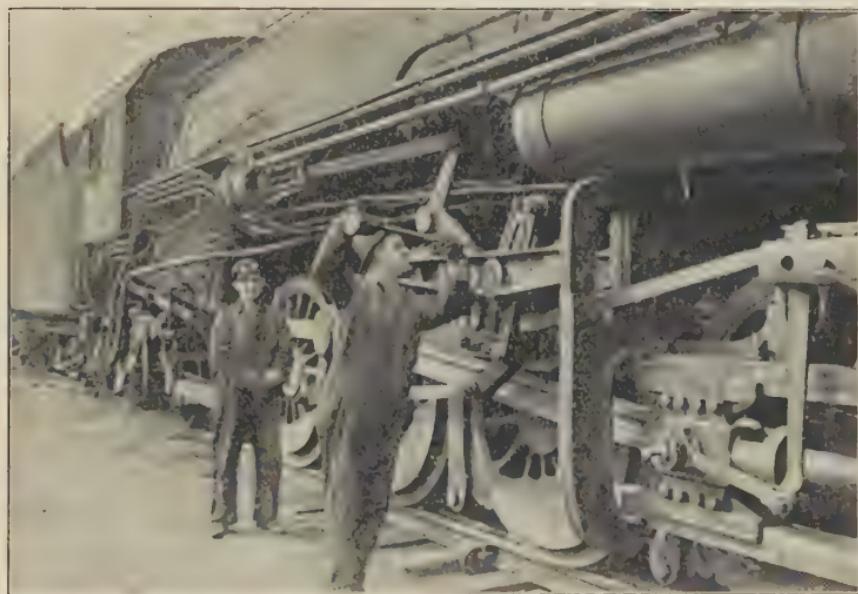
ALCOHOL AND DRUGS NOT YOUR FRIENDS

Alcohol an Outlaw. If you wish to be happy and successful, choose good friends. Some people make the mistake of believing that alcohol and drugs are good friends and if used will bring health and strength. They think also that liquor will help them do their work. This is not true. Year by year the people of America have begun to see that alcohol and drugs are their enemies.

During the World War not only America but Russia, France, and England passed laws to decrease the sale of alcoholic liquors. When men, women, and children were hungry for bread, it seemed foolish to use grain in making alcohol, which was a poison and could not nourish the body. Finally the United States government made it the law of the land that alcohol should not be manufactured and sold for drinking purposes. The saloon disappeared. Alcohol became an outlaw.

Alcohol a Poison. It is sometimes said that alcohol is a food, but there is nothing to show this. Food builds up the body without doing it harm. Dr. Woods Hutchinson says, "As a food alcohol is a joke and a bad joke

at that." Good doctors know that it is a dangerous drug. In large quantities, especially if taken without food, alcohol often causes vomiting or other disturbances of the digestive system. If one goes on trying to drink it the body finally gets so accustomed to it that vomiting does



NO ENGINEER CAN HOLD HIS JOB IF HE IS KNOWN TO DRINK ALCOHOL

not take place. After alcoholic drinks, such as wine and whisky, have been drunk for a long time, the drinker may discover that he is wasting his money and injuring his body and mind. What is true of alcohol is also true of opium, cocaine, and other drugs. If we use them too long they become our masters and we become their slaves.

The best way to deal with alcohol is to leave it alone. It is an enemy. It is better never to take the first drink.

Alcohol injures the Body. Since alcohol is a poison, we might expect that it would injure the whole body, and it does. It injures the brain so that we cannot think so well. Railroad companies realize this. Even before the days of prohibition an engineer could not hold his position if he used alcohol or was found in a saloon.

Not only the brain but also the heart, the liver, the kidneys, and the organs of digestion are injured by alcoholic drinks. It is well known in hospitals that patients who use a good deal of alcohol have less chance for getting well than those who never use it. This is especially true of those who have pneumonia.

As alcohol injures the body, those who use it are less likely to live to an old age than those who let it alone. A study of the records of the insurance companies of the world shows that those who abstain from the use of alcoholic drinks live longer than those who have poisoned their bodies and minds with alcohol.

Benjamin Franklin, the Water American. It was once thought that the drinking of alcohol could help one to do more work. We now know this to be untrue. Benjamin Franklin long ago discovered that alcohol was no friend of the workman. At one time Franklin was employed in

a large printing-office in London. There were about fifty workmen. They looked upon Franklin as something of a curiosity because he did not drink. As for themselves they drank a pint of beer at each meal, between meals, before breakfast, and at the close of their day's work. They believed that they needed to drink much beer to get strength and courage to work. In telling his story, Franklin says:

I drank nothing but water. The other workmen were great drinkers of beer. I carried occasionally a large form of letters in each hand, up and down stairs, while the rest took both hands to carry one. They were surprised to see, by this and many other examples, that the American Aquatic, as they used to call me, was stronger than those who drank porter.

Alcohol means Failure in Athletics. Fielding Yost, often called "Hurry-Up Yost," a great football coach, said, "A boy or young man who drinks does not give himself



CONNIE MACK ALWAYS ADVISES ATHLETES TO LET ALCOHOL ALONE

a fair chance." Every athletic coach today knows that a team to win must let alcohol alone. Hugh S. Fullerton made a study of the records made in baseball by a group of men who drank and a group who did not. He found that the drinkers were the worst players, and each year their playing became poorer and poorer. The record of those who did not drink became better and better.

We do not wonder, then, that Connie Mack, a great baseball manager, said, "I do not bother with youngsters that drink."

Health Habits Better than Drugs. If we wish to be strong and healthy, it is not safe to run the risk of using drugs without the advice of a physician. The habit-forming drugs, such as alcohol, opium, and morphine, should be strictly avoided. It is undesirable also to get the habit of using regularly so-called patent medicines. Most of them are worthless, and some of them are even harmful.

The better way to gain health is to eat nourishing food, get plenty of sleep, and live as much as possible in the open air.

Remember

1. Alcohol is a poison.
2. It is not a food in the proper sense.
3. It may make slaves of those who drink it.

4. It makes us hot in hot weather.
5. After the first half hour it makes us cold in cold weather.
6. Many employers will not hire men who drink.
7. It decreases the length of life.

Health Habits

1. Drink no alcoholic beverages.
2. Avoid food and drinks which contain alcohol.
3. Take no morphine, opium, cocaine, or other habit-forming drugs.

Review and Thought Questions

1. Why did the American people make an outlaw of alcohol?
2. What is the difference between alcohol and a food?
3. Can you think of anybody who made a success in life by drinking alcohol?
4. Why do some employers refuse to employ drinkers?
5. Why was Benjamin Franklin called the American Aquatic? Can you tell about some of the things he accomplished?
6. Why is it dangerous to try a drink of alcohol or a dose of morphine?

CHAPTER XXVII

TOBACCO NOT YOUR FRIEND

Caught in a Trap. Another trap which young people may get into is that of using tobacco. Nobody ever begins the tobacco habit because of a natural craving for tobacco. Usually children begin to smoke because they see other children or older people smoking. The first attempt often produces sickness such as dizziness and vomiting, especially if the first dose is a large one. This shows that tobacco is a poison. As a person gets the habit, tobacco no longer causes nausea. The one who uses it is likely to think that it is harmless because it no longer makes him ill. This means that the trap is closing up on him. He is forming a vicious habit which he will find very hard to break.

Tobacco a Poison. Everybody knows that tobacco contains a poison called nicotine. This is so powerful that if the nicotine in an ordinary cigar could be turned into the blood, it would soon cause death. The reason why habitual smoking is not more serious is that much of the nicotine in the tobacco is thrown off in the smoke or through spitting. One drop of nicotine on the broken

skin of a rabbit will cause death. Two drops on the tongue of a dog or cat will bring about death.

Tobacco injures the Body. We should naturally expect that anybody who smoked, chewed, or used as snuff this poisonous weed would be injured somewhat. Tobacco

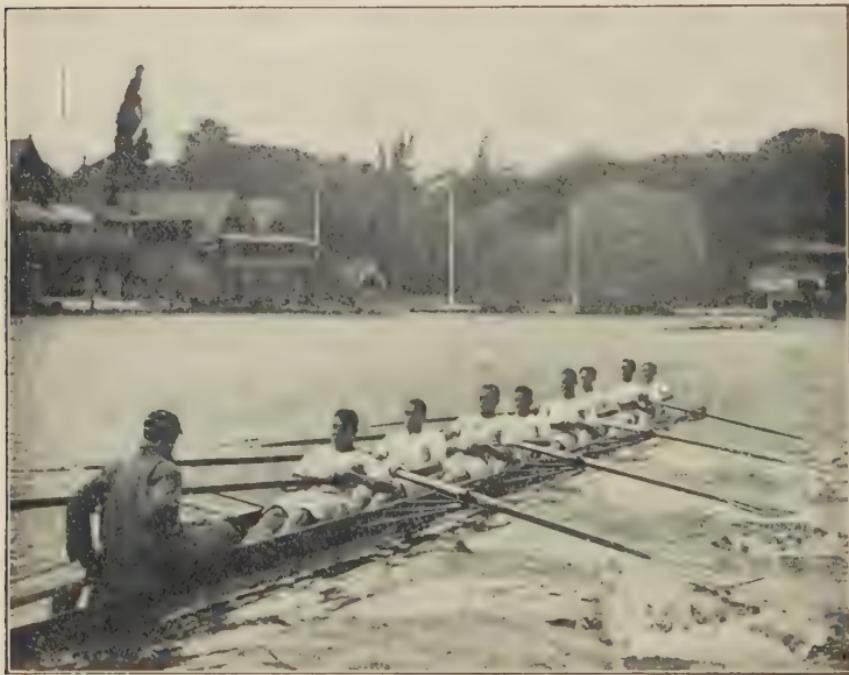


TOO WISE TO BE CAUGHT

smoke irritates the tongue, mouth, and throat. It sometimes destroys the appetite and makes it more difficult for one to sleep. Men of science tell us that it may weaken the heart and cause shortness of breath.

Tobacco may injure the eyes even to the point of causing blindness. Not long ago a wealthy man living in the Middle West noticed that his eyesight was failing.

He went to one doctor after another, but received no help. He even went to doctors in Europe. Finally a doctor told him what the trouble was and how he could be cured. The habitual use of tobacco was injuring his



COLLEGE MEN IN TRAINING DO NOT USE TOBACCO

eyes. If he did not stop he would finally be blind. After using tobacco for over thirty years he found that it was not easy to stop, but he did, and his eyesight was soon as good as it ever was. No medicine was necessary. All he needed to do was to stop a bad habit.

Tobacco more Injurious for Children. The boys and girls who read these pages will at once think of the many men they know who use tobacco and do not seem in ill health. This is true; but we do not know how much stronger and healthier they would be if they used no tobacco. Then some people have such strong bodies from birth and take such good care of their health in other ways that tobacco seems to injure them very little. Nobody has yet proved that using tobacco makes us more healthy.

Doctors all agree that tobacco is especially bad for children, no matter in what form it may be used. Cigarettes are often thought harmless because they are so mild, but their mildness usually leads people to smoke more of them. For a child tobacco is bad because it fixes on him a vicious habit from which he is unlikely to escape. It is a habit which does him no good, but which costs money and may interfere with his success and ruin his health. One physician says that if any boy is foolish enough to want to learn to smoke, he should wait until he is at least twenty-five years old.

Tobacco an Enemy of Athletes. Every good baseball or football team knows that tobacco is an enemy rather than a friend. Members of a team must usually promise not to smoke, especially while in training.

Tobacco has a narcotic effect. Narcotics deaden the brain and so interfere with the control of the muscles.

This is shown by some tests in pitching baseball at a college in Springfield, Massachusetts. Twelve men took

part. Some smoked, and some did not. They were to throw sixty feet at a target which was five feet square. The target had a small circle, one foot across, in the middle known as a bull's-eye. If they hit the bull's-eye, they won five points. The drawing on this page shows the target. There was to be no count if the target was missed.



SMOKING AFFECTS CONTROL

CAREFUL tests of a group of baseball pitchers, both smokers and non-smokers, indicated a loss of twelve per cent. in accuracy in pitching a baseball at a target after smoking one cigar. This advanced to fourteen and a half per cent. after two cigars.

When the men did not smoke they increased in accuracy nine per cent.



In this experiment there were three tests—*A*, *B*, and *C*. In test *A* the men made ten throws at the target. Then there was a recess period of thirty minutes in which each smoked one cigar. After smoking, they again threw ten times at the target.

Test *B* was the same as test *A* except that the recess lasted one hour. Two cigars were smoked.

Test *C* was the same as the other tests except that the recess of thirty minutes was used for rest. There was no smoking.

Both the smokers and those who ordinarily did not smoke pitched more poorly after smoking. Both groups did better after resting for a half hour.

These tests go to show that even one cigar makes one pitch poorer baseball. Two cigars make the pitching worse. The best results were attained when rest rather than smoking came in the recess period.

Hugh Fullerton says: "I have never doubted but that smoking is injurious to the wind. Nor have I ever met an athlete who, whether he smoked or not, did not admit that it was harmful."

The Tobacco Habit Expensive. One of the best reasons for not using tobacco is its cost. Every time money is spent for tobacco it is being spent for something which is not necessary. If that money were saved, it would grow into a large sum in the savings bank. In the end it might be spent for something worth while, such as beautiful clothes, books, pictures, or travel.

It is doubtful also whether anyone has been helped in a business way by the use of tobacco. Some men think

that offering a man a smoke helps to get business. There was a time when it was thought that offering a man a drink was necessary to start business right. Business men soon found that this was very poor policy. They will also find out in time that offering a smoke does not help them in any way. Some employers hesitate about hiring any boy who is an incessant smoker.

Tobacco not Helpful in School. Some students who smoke do fairly well in school and college, but as a group those who smoke do poorer work than those who let tobacco alone.

Tobacco is not a friend to have with you as you try to travel along the road which leads to success. The tobacco habit must always be something of a burden.

Remember

1. The tobacco habit is a trap.
2. It is hard to break any drug habit.
3. Tobacco contains nicotine—a deadly poison.
4. Tobacco lessens the power to do work.
5. The use of tobacco is expensive and does no good.

Health Habits

1. Avoid drug habits of every kind. This includes the tobacco habit.
2. Save your money instead of buying tobacco. Then watch your bank account grow!

Things to Do

1. Put some insects in a stoppered bottle. Get somebody who smokes to blow tobacco smoke into the bottle. What happens?
2. Spray some plants with nicotine solution to kill plant lice.
3. Find out from some man who smokes how much his tobacco costs per week. How much will it cost for a year? If the money spent for tobacco were put in the savings bank at 5 per cent, how much money would he have in ten years?

Review and Thought Questions

1. How do we know that tobacco is a poison?
2. If nicotine is a deadly poison, why do smokers and chewers escape death?
3. What is a cigarette cough?
4. If one smokes many times a day for years, will he slowly begin to feel the effects of the drug?
5. Why is tobacco an enemy of athletes?

CHAPTER XXVIII

GOOD MENTAL HABITS

I will Try. Polly and Sally lived on the same street. Their birthdays both came in July, and they went to the same school. Yet they were very different.

Polly never said "I can't." If father asked her if she could find his gloves, she said "I will try." Sometimes she found the arithmetic lesson very hard, but she never asked other people to help her until she had worked on it for a long time. "Hurrah, mother," she shouted one day after she had been working on her examples; "I have done the very last one. I find you can do almost everything, no matter how hard it is, if you just won't give up."

Sally was not much like Polly. When her father or mother asked her to help she would say, "Why don't you ask brother instead of me?" She was always complaining, "Papa, there isn't a bit of use in trying to get my history lesson. I simply can't do it. I guess I won't go to school this morning. I have a headache."

The great difference between these two girls was this: Polly had learned to do hard things, but Sally had never

learned to help herself. When she found something hard, she tried to get other people to do it for her. Often she made silly excuses.

One of these girls never even got through school. She grew up a very unhappy girl. Which one was it? Which one should you guess became the private secretary of a railroad president at a salary of \$5000 a year?

If you wished to hire somebody to rake your lawn or saw some wood, should you choose the boy who had learned to do hard things or the one who was all the time making excuses?

The world is always looking for boys and girls who have the courage to do hard things. If you are learning day by day to do hard things, you are forming a mental health habit that will help you to be successful and happy. There are some other mental habits that are worth while.

Make Daydreams come True. We all like to build castles in the air. Sometimes when we are getting our lessons we forget what we are doing and dream wonderful dreams. In those dreams we are always doing great things, such as taking a trip on the ocean, climbing mountain peaks, or singing beautiful songs. It's fun to make up fairy stories of our own, but we shall never do anything in life worth while if we just dream about what we

want to do. Some children spend so much time in dreaming that they do not have time to get their lessons or be of any help to other people.

In some way we must make our dreams come true. The way to do that is to *do* some of the things we think about. To travel means that we must earn money. Learning our lessons will help us to earn money.

One thing worth remembering is to pay attention to the thing we are doing if we wish to have our dreams come true. Success comes by working with all our might when we work, and playing with our whole body and mind when we play.

Theodore Roosevelt was a dreamy boy, but he was not content to spend his time in idle dreaming. With great effort he trained himself to realize his ambitions. He succeeded.

Be your Own Master. There are some boys and girls who are not their own masters because they do not have self-control. They get angry—so angry that they say and do things they are sorry about afterward. Some scientists say that when we get angry there is a poison which collects in the body. This poison interferes with our digestion and so is a hindrance to good health. Others say that the harm comes because anger stops the stomach from mixing the food and pouring out juice. Whatever

happens, all agree that anger and other violent emotions hinder digestion and make happy living more difficult.

If we use our wills we can do much to control our anger. When you begin to feel angry, stop for just one minute to think, and then say to yourself, "I will not get angry." Think very slowly and carefully about what you are to say and do.

Professor James of Harvard once said that we could do much in the way of control if when we began to feel angry we just stopped to count up to ten.

One thing is certain: if we fail to control our tempers we shall fail to have quiet, peaceful, and happy minds. We shall find it hard to make and keep our friends.

Be Cheerful. Another good habit of the mind is that of being cheerful. Persons who are cross, disagreeable, and unhappy are likely to have bad digestions. They will make few friends. If you are cultivating such habits, you will find it hard to be successful.

One way to be cheerful is to try not to worry. Most of the things that people worry about never happen anyway. But worrying about something before it happens is very likely to be so fatiguing to mind and body that we are more liable to fail. To worry about a thing that has happened is useless. Crying about the spilt milk will not put the milk back in the pitcher or take the stain

out of the rug. When something unfortunate happens the best thing to do is to think out as good a plan as we can, do what needs to be done, and then say cheerfully, "I'll see that it doesn't happen again."



JACKIE COOGAN PLAYING THE GAME
SQUARELY

friends. To have friends we must show ourselves generous and kind and helpful to others.

Cheerfulness makes us strong bodily and mentally. It is the foundation of success.

Meeting Everybody Squarely. Another thing that helps toward peace of mind is to live so that you can look at everybody face to face without a feeling of shame.

One way to learn to be cheerful is to try to think the most pleasant thoughts rather than those that are sad and disagreeable.

Another way is to try not to be selfish. Children who are always thinking about themselves and doing very little for others find it hard to be cheerful because they make few

When Jackie Coogan asked his mother what one should do after changing his mind, she said: "It all depends on whether you change your mind because you don't want to keep the promise, or because you can't keep it. You must be careful how you make a promise and do everything you possibly can to keep it. Then if you really can't, you must explain why to the person you made it to."

Jackie's mother was advising him to do everything on the square.

Remember

1. Good mental habits are necessary for health.
2. Habits of mind, like habits of body, are formed by effort. To form a habit, practice it every day.

Health Habits

1. Try to do what ought to be done, and do it gladly.
2. Keep happy and cheerful.
3. Be unselfish.
4. Learn to fix your attention on what you are doing.
5. Try to be orderly at home and at school.
6. What other mental habits are desirable?

Review and Thought Questions

1. Can a bad disposition spoil a person's hope of success and happiness?
2. What may happen if we lose our temper?
3. What kind of day-dreaming counts?

CHAPTER XXIX

SLEEP MAKES CHILDREN HEALTHY AND HAPPY

Sleeping on the March. If you have ever been on a long hike, you know how tired you were and how good the bed felt at night. You may have caught yourself going to sleep that night while you were unlacing your shoes.

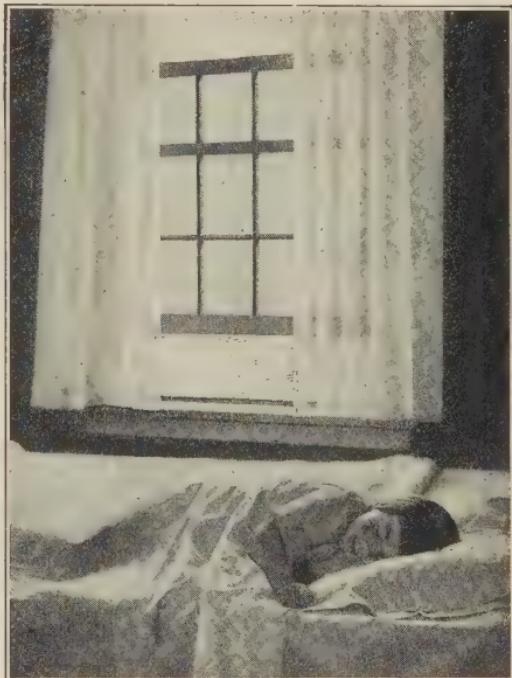
You will be interested to hear a story about the allied soldiers which shows what people will do while they sleep. During the days preceding the first battle of the Marne in the World War, the Allies retreated for nine days and nights, until they finally formed the battle line which saved Paris. They had little food and water on this long march of one hundred and eighty miles.

You may wonder how these men were able to get along for so many days without sleep. Dr. George W. Crile tells us that these men often slept while they marched. Every artillery man must have slept on his horse because every one of them lost his cap.

Many of the men who were wounded and went to the hospital had their wounds dressed without waking. Often they slept for two or three days. Then they would awake and eat, drink, and talk with their friends.

Why we need Sleep. Such a story shows how necessary sleep is. Although these soldiers had had little food or drink, they were obliged to sleep first. Some men have gone without food for several weeks, and at the end of that time they felt quite well. Of course they had water and plenty of sleep.

The reason we must sleep is that the body needs to be repaired. It is very much like any machine, such as a bicycle or an automobile. It wears out with long-continued use. It is different



REFRESHING SLUMBER

from a real machine, because it can repair itself and be as good as ever if it has a chance for sleep, fresh air, and nourishing food. But sleep is very necessary. It makes no difference how much you rest, how much water you drink, and how much nourishing food you eat, you will not be able to play, work, and grow unless you get plenty

of sleep. Five sleepless days and nights is as much as any human being can stand and live.

Lack of sleep will soon make one look pale and haggard. Every long refreshing sleep is a beauty sleep.



EVEN IN A CROWDED CITY REST AND SLEEP IN THE OPEN AIR
ARE POSSIBLE

Sleeping-time is the growing-time and the resting-time of childhood. It helps to make you cheerful and happy in your work and play.

Children need Plenty of Sleep. Although everybody needs sleep in order to be happy and strong, children need more hours of sleep than grown-up folks. If you have

ever had a newborn baby in your house, you know that for the first three months he did little more than eat and sleep. That is because during the first few months of life a baby is spending his time in growing. As he grows older he needs less and less sleep, but so long as he is a child he always needs far more than his father and mother. This is because he is much more active than older people, and also because he is still growing.

If you will read what follows, you will know how many hours you ought to sleep:

Children of four and five should sleep at least twelve hours each night.

Children of six and seven should sleep eleven and one-half hours each night.

Children of eight and nine should sleep eleven hours each night.

Children of ten and eleven should sleep ten and one-fourth hours each night.

Children of twelve and thirteen should sleep ten hours each night.

Are you getting enough sleep?

Sleep with your Window Open. It is impossible to have a refreshing night's sleep with the windows closed. The air gets hot and moist and stuffy. We are likely to wake up or be very restless.

In both summer and winter we should sleep with our windows open at the bottom and the top. It was once thought that night air was unhealthful, but we know now that everybody needs fresh air at night.

In the summer we should sleep where we can get the most fresh air. Sleeping on porches and in tents is excellent for health in the summer.

Sleep, Beauty, and Cheerfulness. When you have been up later than usual for an evening or so, you know how uncomfortable you generally feel. Everything is likely to go wrong. You are apt to be cross and find fault. Long hours of sleep, breathing the fresh air, make children feel sunny and cheerful.

Children who go to motion pictures a good deal in the evening, stay up late, and sleep with their windows closed often look thin, pale, and tired. Plenty of sleep makes children plump, rosy-cheeked, and attractive in appearance.

Remember

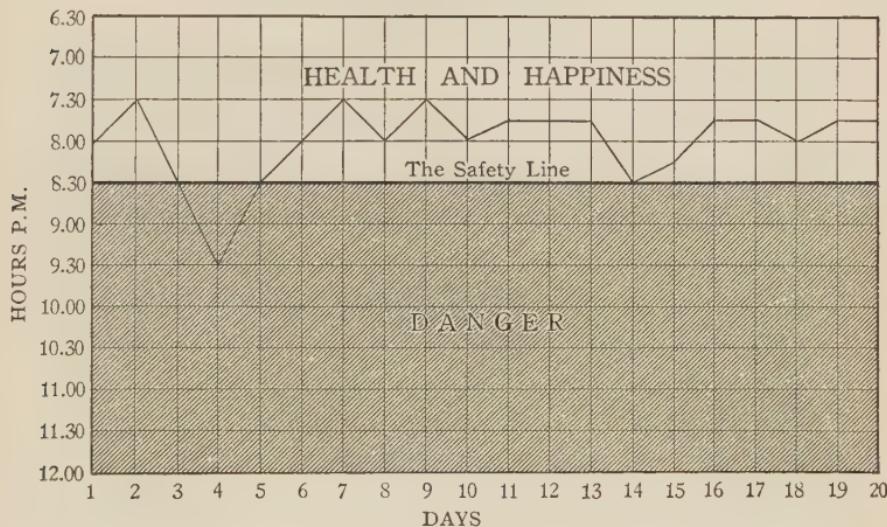
Sleep is necessary for health, happiness, and success.

Health Habits

1. Get plenty of sleep.
2. Sleep with the windows open.
3. Go to bed early.

Things to Do

Decide what your latest time for going to bed must be if you are to get enough sleep. Keep a record of your time for going to bed by some such plan as this:



Review and Thought Questions

1. May one walk or talk in his sleep? When?
2. What is the value of sleep?
3. Why is sleeping-time a growing-time for children?
4. Why do children need more sleep than older people?
5. How many hours do you sleep?
6. Why do we snore?

CHAPTER XXX

BAD NEIGHBORS IN COURT

Before the Judge. It was not many years ago that people thought flies were just a nuisance. They had the bad habits of buzzing close to one's ears when he was trying to sleep, dropping into one's food at the table, and spoiling the looks of the furniture.

Nobody dreamed that the house fly was a dangerous neighbor—often as dangerous as a rattlesnake.

Then somebody began to ask questions and complain about the fly. Finally he was brought into court. He was accused of being a bad neighbor. Nobody had a word to say in his favor. He was asked a number of questions, but he answered none of them.

Is the Fly Clean? This was the first question. Mr. Fly hung his head in shame and said not a word. Witnesses came into court and told about the early life of the fly. They said he was hatched from eggs laid in heaps of manure and filth. They had often found him crawling in the garbage can or the filth of a stable. The witnesses said they thought that he had no clean habits whatever because he was born in filth and lived in filth.

Does the Fly cause Sickness? This was the second question. Again Mr. Fly refused to answer. He seemed more ashamed than ever. Once more witnesses appeared who told about Mr. Fly walking through the filth of the street, then flying to a garbage can and walking over a



THE CRIMINAL BEFORE THE JUDGE

rotten piece of fish. From the garbage can he flew directly to a dining-room, where he wiped his feet on a piece of chocolate cake and took a bath in a glass of milk. They pointed to his feet, with their many hairs and cavities, which seemed made to carry filth.

The witnesses accused the fly of being the cause of much sickness in the summer. "When the flies come,"

they said, "children and older people have trouble with their digestions and have typhoid fever. When the flies go away in the fall, the sickness disappears. Flies help to spread disease."

Mr. Fly found Guilty. "Stand up," said the judge. "Is there anything you have to say for yourself? Is there any reason why sentence should not be passed?"

Mr. Fly made no answer.

The judge said in a stern voice: "You are found guilty of being a bad neighbor. You are disgustingly filthy and the cause of much sickness. It is not safe for you to visit anybody's house even for a few minutes. From now on every man's hand is to be raised against you and all your relatives. You must die."

Kill Flies. From that day to this there has been a big campaign against flies. Sticky fly-paper, the flytrap, and the fly-swatter have all been used to get rid of the fly.

Every child can do something in this campaign. The time to begin is in the spring. At that time there are few flies around, but it is very important that these few should be killed. A fly lays about two hundred eggs in a batch; in ten days these will be hatched and become full-grown flies. At that rate the full-grown fly which you see in April will produce millions of flies in a season. How important it is then to kill the early fly!

Keep your Premises Clean. Any neighborhood that has flies is to blame, for flies always breed in filth. If we keep our yards and neighborhoods free from all kinds of filth, there will be no flies. If we take good care of our



PROTECTED FROM FLIES

garbage, stables, and outhouses, we are doing our part to make the life of the fly impossible in our neighborhood.

Screen Food against Flies. Since flies track the worst kind of dirt and disease wherever they go, we need to be very careful to screen all our food against them.

The Mosquito a Bad Neighbor. Many years ago it was noticed that people who lived near damp, marshy places

often fell sick with malaria. It was thought that dampness was a cause of the sickness. Now we know that mosquitoes may carry the disease by biting a person ill with malaria and then biting a healthy person.

Make War on Mosquitoes. Not all the mosquitoes you see buzzing around carry sickness. There are only certain kinds of mosquitoes that can carry malaria, and these cannot carry sickness unless they have first bitten a person who was ill with the disease.

The best way to protect oneself against the mosquito is to see that it is not possible for him to come into the world. Mosquitoes always lay their eggs in stagnant water. The eggs change into wigglers, and the wigglers change into mosquitoes. If we could get rid of stagnant water, we should never have any mosquitoes.

Boys and girls may make war on the mosquito and protect themselves and others in these ways:

1. Early in the spring fill in every hole and hollow around your houses where water may stand.
2. Remove every can, pan, bottle, or other receptacle which might hold water and breed mosquitoes.
3. Remember to shut the screen doors.
4. Kill every mosquito you can.

Remember

1. Some insects are bad neighbors. They spread disease, cause inconvenience, and are expensive.
2. Flies are filthy. They increase very rapidly.
3. Mosquitoes are annoying. They carry disease. They breed in water.

Health Habits

1. Keep premises so clean that no flies can breed or feed.
2. Use screens.
3. Be cleanly.
4. Keep flies away from food.
5. Kill flies. Starve them and prevent them from breeding.

Things to Do

1. Make a fly-swatter. Kill every fly in the schoolroom.
2. Keep a record of the number of flies you kill every day for a week.
3. Examine the screens for holes and repair any found.
4. Visit the markets in your neighborhood. Write a composition telling whether the food is protected from flies.
5. Make some health posters on bad neighbors.

Review and Thought Questions

1. How do flies carry disease?
2. How do mosquitoes carry disease?
3. Why is the spring a good time to begin a campaign against insects?

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APPENDIX

THE USE OF WEIGHT-HEIGHT-AGE TABLES¹

(Directions of the United States Bureau of Education)

1. *Take the height first.* Nail an accurate measure on the wall. Two yardsticks, a new tape measure, or a drawn scale will serve. Let the child stand, without shoes, flat against the wall, with heels, shoulders, and head touching the wall, and place a right-angled piece of wood (a chalk box will answer) firmly over his head and against the measuring scale.
2. *What is the child's age?* Take the nearest birthday.
3. *Then consult the chart for the proper weight for this child's age and height.* First find the height in the left column and follow across the chart to the appropriate age column. The figure so found is what this child should weigh.
4. *Now weigh the child.* Have the child, in indoor clothing but without shoes, stand in the center of the scale platform. Teach the child to weigh himself, but in the monthly weighings the teacher should do the weighing.
5. *Next, the record.* Enter the weight on the classroom weight record. State the monthly weight on the monthly report card. Use one record for each section of the class and pass on with the section when promoted.
6. *Since this chart is chiefly for its educational value, the health lesson is the most important part of the procedure.* Emphasize the need of weight gains each month. Study foods and their relation to growth. Study health habits and their effect upon the weight curve.

¹ These new Weight-Height-Age Tables are a revision, by Bird T. Baldwin and Thomas D. Wood, of the Wood tables formerly used. The figures represent a large group of presumably healthy children, most of whom are native born. These figures are believed to be the most accurate available.

APPENDIX

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WEIGHT—HEIGHT—AGE TABLE FOR BOYS

HEIGHT INCHES	5 YR.	6 YR.	7 YR.	8 YR.	9 YR.	10 YR.	11 YR.	12 YR.	13 YR.	14 YR.	15 YR.	16 YR.	17 YR.	18 YR.	19 YR.
38	34	34													
39	35	35													
40	36	36													
41	38	38	38												
42	39	39	39	39											
43	41	41	41	41											
44	44	44	44	44											
45	46	46	46	46	46										
46	47	48	48	48	48										
47	49	50	50	50	50	50									
48		52	53	53	53	53									
49		55	55	55	55	55	55								
50		57	58	58	58	58	58	58							
51		61	61	61	61	61	61	61							
52		63	64	64	64	64	64	64	64						
53		66	67	67	67	67	67	68	68						
54		70	70	70	70	70	71	71	72						
55			72	72	73	73	74	74	74						
56			75	76	77	77	77	78	78	80					
57				79	80	81	81	82	83	83					
58				83	84	84	85	85	86	87					
59					87	88	89	89	90	90	90				
60					91	92	92	93	94	95	96				
61						95	96	97	99	100	103	106			
62						100	101	102	103	104	107	111	116		
63						105	106	107	108	110	113	118	123	127	
64							109	111	113	115	117	121	126	130	
65							114	117	118	120	122	127	131	134	
66								119	122	125	128	132	136	139	
67								124	128	130	134	136	139	142	
68									134	134	137	141	143	147	
69									137	139	143	146	149	152	
70										143	144	145	148	151	155
71										148	150	151	152	154	159
72											153	155	156	158	163
73											157	160	162	164	167
74											160	164	168	170	171

HEALTH AND SUCCESS

WEIGHT—HEIGHT—AGE TABLE FOR GIRLS

HEIGHT INCHES	5 YR.	6 YR.	7 YR.	8 YR.	9 YR.	10 YR.	11 YR.	12 YR.	13 YR.	14 YR.	15 YR.	16 YR.	17 YR.	18 YR.
38	33	33												
39	34	34												
40	36	36	36											
41	37	37	37											
42	39	39	39											
43	41	41	41	41										
44	42	42	42	42										
45	45	45	45	45	45									
46	47	47	47	48	48									
47	49	50	50	50	50	50								
48		52	52	52	52	53	53							
49		54	54	55	55	56	56							
50		56	56	57	58	59	61	62						
51			59	60	61	61	63	65						
52			63	64	64	64	65	67						
53			66	67	67	68	68	69	71					
54			69	70	70	70	71	71	73					
55				72	74	74	74	75	77	78				
56					76	78	78	79	81	83				
57					80	82	82	82	84	88	92			
58						84	86	86	88	93	96	101		
59						87	90	90	92	96	100	103	104	
60						91	95	95	97	101	105	108	109	111
61							99	100	101	105	108	112	113	116
62							104	105	106	109	113	115	117	118
63								110	110	112	116	117	119	120
64								114	115	117	119	120	122	123
65								118	120	121	122	123	125	126
66									124	124	125	128	129	130
67									128	130	131	133	133	135
68									131	133	135	136	138	138
69									135	137	138	140	142	142
70										136	138	140	142	144
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BUILDING A GOOD STANDING POSTURE

(Primarily for the teacher)

Prepared by ESTHER WILSON KLEIN, Instructor, Boston School of Physical Education

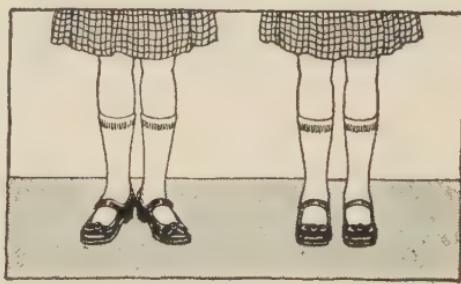
[The following description is intended to show the teacher what good standing posture is and to offer suggestions for teaching it.]

To build a body which is erect and strong is very much like building a house.

First we must have a good foundation. Then the first floor must be placed squarely on this foundation. The second floor will then be placed squarely above the first,

and so on until we have a structure strongly made, each floor being directly above the other without overhanging.

When we walk or run, the muscles of the leg and foot have to work hard. To hold up the arches of the foot and keep the muscles from stretching too much we should stand, walk, and run with the toes pointing straight ahead.

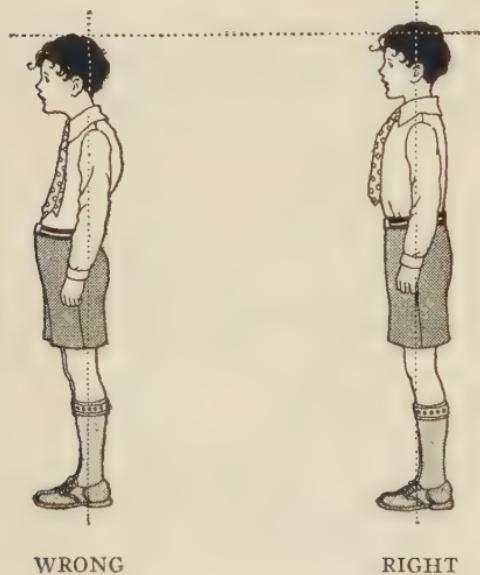


WRONG

RIGHT

Feet parallel

Because it is a trifle easier, many people walk and stand with their feet turned out. The picture on the preceding page shows the right way and the wrong way of placing the feet when we stand.



WRONG

RIGHT

Weight on the front part of the foot

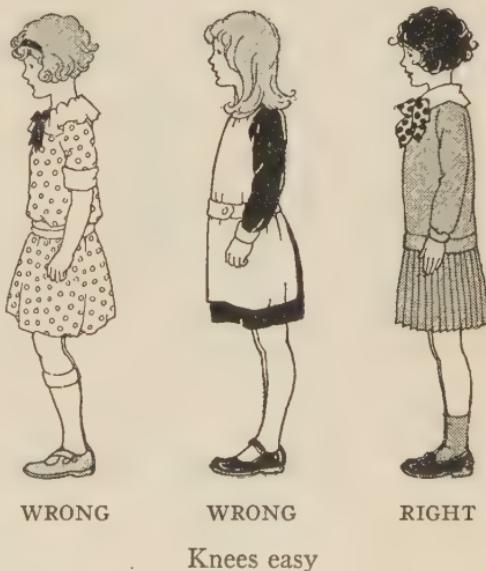
Standing with the feet parallel builds our cellar, or foundation, strongly. The next thing, therefore, will be easier to do. Just in front of the ankle joint is the place for the foot to carry the weight of the body. In poor posture the weight is carried on the heels, but this is wrong. To correct this we stand with

the weight on the heels and then sway forward until it is just behind the balls of the feet and in front of the ankle joint.

Next we see how our first and second stories are built. These are between the ankle and knee and the knee and hip. The knee determines whether these shall be built well or poorly.

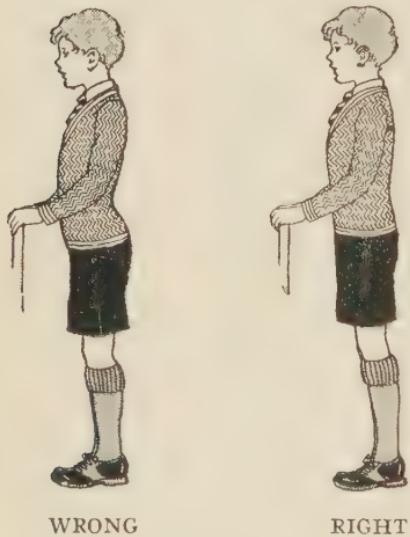
Here, as is shown in the picture, we want the knees straight. To bend them or to push them too far back is wrong. They should be easy, or relaxed. We learn this by pushing the knees back hard, then bending them, and then holding them halfway between these two positions, which is right.

The two big hip bones are a protection and support for the abdominal organs. The spine, or backbone, is the support for all. The spine and hip bones are attached to each other so that the position of one easily influences the position of the other.



Our third and most important floor starts right here. The tools which we work with to make the lower back straight and the hips right are the muscles. A picture is shown of the way we look when the hips and spine are built wrongly. You see how big the abdomen is and how much too far forward the spine is in its lowest part.

There are muscles at the back of the hips with which we pull the hip bones down and muscles on the front of the abdomen with which we pull them up. When we pull them both at the same time they lift the hip bones to a better position. In so doing they push the hollow out of the lower back.



Wrong and right position of lower back

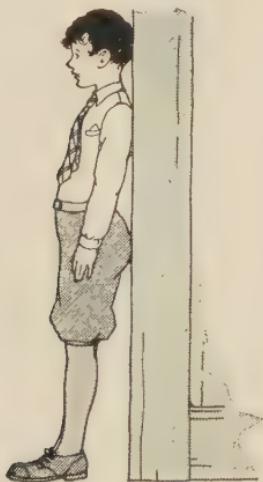
down on the hip ones. See what has happened. The lower back is straight and the abdomen flat. Try this against a wall somewhere. Be sure that your feet are out quite a distance from the wall, and then see if you can flatten your back against the wall.

When you have tried it against the wall do it away from the wall, until without moving any other part of

In the picture you will notice that the boy standing against the wall has a hollow back and a big stomach. Right next to this picture is one of a boy with quite a different position. The second boy has pulled in his abdominal muscles very hard at exactly the same time that he has pulled

the body you can hollow your lower back and then flatten it. So you see how this makes the third story fit well over the second.

Boys and girls stand many times with the upper part of the back rounded and the shoulder blades prominent.



HOLLOW BACK



FLAT BACK

Flatten your back against the wall

This is a very poor position. To correct this we lift the shoulders, then pull them back, and lastly pull them down. It is the last part of the exercise, the pulling down, which we keep for good posture. When the shoulders are low, the chest is high and the spine is straight. These are the things that we are trying to build correctly in erecting this our fourth story.

The fifth story of our body building begins at the base of the neck. This is a rather hard place to build correctly. The pull of the muscles is difficult to feel.

The picture shows the method in which we get a good position of the neck and head. In order to get



LIFT
SHOULDERS



PULL SHOULDERS
BACK AND DOWN

Feet parallel, weight forward, knees easy, lower back flat, lift shoulders, pull them back and down

this last position we lift our chin and thrust it forward and down and then draw it back. This makes the neck move back as in a straight column. Then we can let the chin be lifted a little bit so that it won't look as though we had a double one.

It is very easy to make the mistake of letting the head go too far back, so we must be careful to stop when it is straight.

When we have succeeded in getting

- (1) the feet parallel and a few inches apart,
- (2) the weight slightly in front of the ankle,
- (3) the knees easy,
- (4) the abdomen in and the lower back straight,

(5) the shoulders low and the upper spine straight,
(6) the neck straight and the head held high,
we have erected a body building which is as strong and
as well built as a very fine house.



KEEP LOWER BACK AGAINST CHAIR
AND LIFT SHOULDERS



PULL SHOULDERS BACK
AND DOWN

In building good posture we should not neglect the proper amount of sleep, daily rest, nourishing food, and other important health habits.



THRUST CHIN FOR-
WARD AND DOWN

DRAW NECK
BACK

PRONOUNCING VOCABULARY AND INDEX

KEY. äle, senäte, ät, cäre, åsk, ärm, final, all; ève, èvent, ènd, hér, recent; îce, îll, admiral; öld, öbey, ön, fôr, anchor; üse, ünite, üp, fûr, circus, menü; foôd, foôt; ch as in chop; g as in go; ng as in sing; n as in ink; th as in thin; th as in the; ñ as ny in canyon; oi as in oil; ou as in noun; N (the French nasalizing n), nearly like ng in sing; k as in German ich, ach.

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